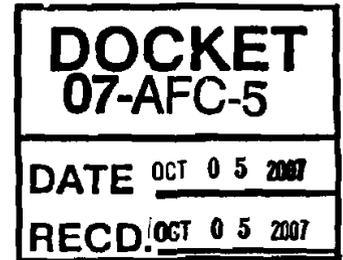




CH2M HILL  
2485 Natomas Park Drive  
Suite 600  
Sacramento, CA  
Tel 916-920-0300  
Fax 916-920-8483

October 5, 2007  
357891



Mr. Jack Caswell  
California Energy Commission  
Systems Assessment and Facilities Siting Division  
1516 9th Street, MS 15  
Sacramento, CA 95814-5504

RE: Data Adequacy, Supplement A  
Ivanpah Solar Electric Generating System (07-AFC-5)

Dear Mr. Caswell:

On behalf of Bright Source Energy, please find attached one original, 75 hard copies and 50 CD-ROMs of the Data Adequacy Supplement A, which addresses Staff's data adequacy recommendation dated September 28, 2007. Included in this submittal are 5 sets of the Conceptual Landscaping Plan at a scale of 1:40.

Please call me if you have any questions.

Sincerely,

CH2M HILL

John L. Carrier, J.D.  
Program Manager

c: Project File

---

*Supplement A*

**In Response to Data Adequacy Review**

of the

**Application for Certification**

for the

**Ivanpah Solar Electric  
Generating System  
(Ivanpah SEGS)**

**(07-AFC-05)**

Submitted to the  
**California Energy Commission**

Submitted by  
**Solar Partners I, LLC;  
Solar Partners II, LLC;  
Solar Partners IV, LLC;  
and Solar Partners VIII, LLC**

October 2007

**CH2MHILL**

2485 Natomas Park Drive  
Suite 600  
Sacramento, CA 95833

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AQ-1A	Application for the Authority to Construct	
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CR-1B	Confidential CHRIS Figure	
WR-1A	Analytical Data used to Create the Tables for the Colosseum Wells #1 and #2	

# Introduction

---

This supplement to the Ivanpah Solar Electric Generating System (Ivanpah SEGS) Application for Certification (AFC) (07-AFC-5) responds to comments the California Energy Commission (CEC) Staff have made as a result of their data adequacy review of the AFC. The intention of this supplement is to provide all additional information necessary for Staff to find that the AFC contains sufficient and adequate data to begin a power plant site certification proceeding under Title 20, California Code of Regulations and the Warren-Alquist Energy Resources Conservation and Development Act.

The format for this supplement follows the order of the AFC sections and provides additional information and responses to CEC information requests on Transmission System Engineering, Air Quality, Biological Resources, Cultural Resources, Land Use, Socioeconomics, Soils, Traffic and Transportation, Visual Resources, Waste Management, and Water Resources. Only sections for which CEC Staff posed requests or questions related to data adequacy are addressed in this supplement. If the response calls for additional appended material, it is included at the end of each subsection.

Each subsection contains data adequacy questions or information requests, with numbers and summary titles and, in brackets, the citation from Appendix B, Title 22, California Code of Regulations (*Regulations Pertaining to the Rules of Practice and Procedure and Power Plant Site Certification*) indicating a particular information requirement for the AFC. Each item follows with the CEC Staff comment on data adequacy for this item, under the heading "Information required for the AFC to conform with regulations" followed by the Applicant's response to the information requested.

# 3.0 Transmission System Engineering

---

## 1. Detailed Description [Appendix B(b)(2)(C)]

*A detailed description of the design, construction, and operation of any electric transmission facilities, such as power lines, substations, switchyards, or other transmission equipment, which will be constructed or modified to transmit electrical power from the proposed power plant to the load centers to be served by the facility. Such description shall include the width of rights of way and the physical and electrical characteristics of electrical transmission facilities such as towers, conductors, and insulators.*

### **Information required for the AFC to conform to the regulations:**

*a. Provide a complete electrical one-line diagram (or resubmit Figures 3.1-1 and 2.2-3b) of Ivanpah Solar Electric Generating System (Ivanpah SEGS) 1, 2 and 3 switchyards showing all equipment for generator interconnection with the switchyard including any bus duct connectors or cables, 4.16-kV switchgear & breakers on the low side (19 kV), generator step-up transformers, short overhead line or conductors with its configuration, buses, breakers and disconnect switches on the 115 kV side and their respective ratings.*

**Response** – One-line diagrams of the 100 MW plant (Figure TSE-1a) and the 200-MW plant (Figure TSE-1b) are attached.

*b. Provide a complete electrical one line diagram for proposed SCE 115/230kV substation with its configuration, buses, breakers, disconnect switches, 115/230-kV step up transformer and their respective ratings.*

**Response** – A one-line diagram of the proposed SCE 115/220-kV substation is provided as Figure TSE-2. The Applicant's generation tie-lines are shown entering the substation, and the remainder of the substation is shown on a conceptual basis. Southern California Edison will design the remainder of the substation and some details may change.

## 2. Permit Schedule [Appendix B(i)(3)]

*A schedule indicating when permits outside the authority of the commission will be obtained and the steps the applicant has taken or plans to take to obtain such permits.*

### **Information required for the AFC to conform to the regulations:**

*Indicate when the project will receive preliminary approval from the California ISO, and when a copy of an updated System Impact Study (SIS) will be available and provided to the California Energy Commission.*

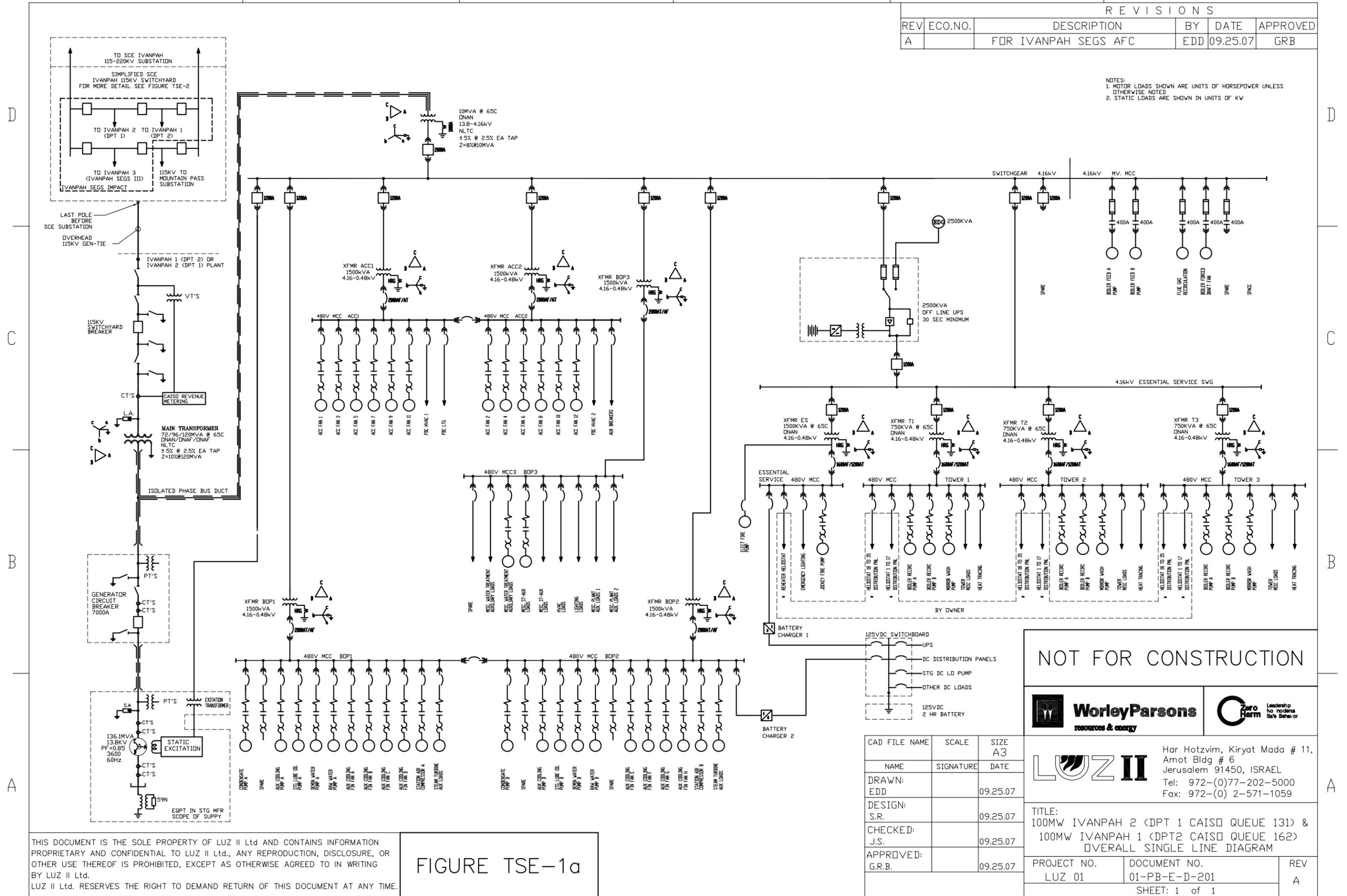
**Response** – Each plant has a separate interconnection request before the CAISO and there are three interconnection studies in process. The estimated completion dates for the studies are as follows:

<b>CAISO STUDY</b>	<b>System Impact Study</b>	<b>Facilities Study</b>
Ivanpah 1	11/25/07	8/6/08
Ivanpah 2	11/9/07	7/21/08
Ivanpah 3	2/18/08	10/30/08

The estimated completion dates are based on the statutory periods in the FERC Tariff. Because of the many projects in the queue and the need for projects higher in the queue to be studied first, actual completion may take more time.

REVISIONS					
REV	ECO.NO.	DESCRIPTION	BY	DATE	APPROVED
A		FOR IVANPAH SEGS AFC	EDD	09.25.07	GRB

NOTES:  
 1. MOTOR LOADS SHOWN ARE UNITS OF HORSEPOWER UNLESS OTHERWISE NOTED  
 2. STATIC LOADS ARE SHOWN IN UNITS OF KW



NOT FOR CONSTRUCTION

**WorleyParsons** resources & energy  
**Zero Harm** Leadership No Incidents Safe Behavior

**LUZ II** Har Hotzvim, Kiryat Mada # 11, Amot Bldg # 6, Jerusalem 91450, ISRAEL  
 Tel: 972-(0)77-202-5000  
 Fax: 972-(0) 2-571-1059

TITLE:  
 100MW IVANPAH 2 (DPT 1 CAISO QUEUE 131) & 100MW IVANPAH 1 (DPT2 CAISO QUEUE 162) OVERALL SINGLE LINE DIAGRAM

CAD FILE NAME	SCALE	SIZE
		A3
NAME	SIGNATURE	DATE
DRAWN: EDD		09.25.07
DESIGN: S.R.		09.25.07
CHECKED: J.S.		09.25.07
APPROVED: G.R.B.		09.25.07

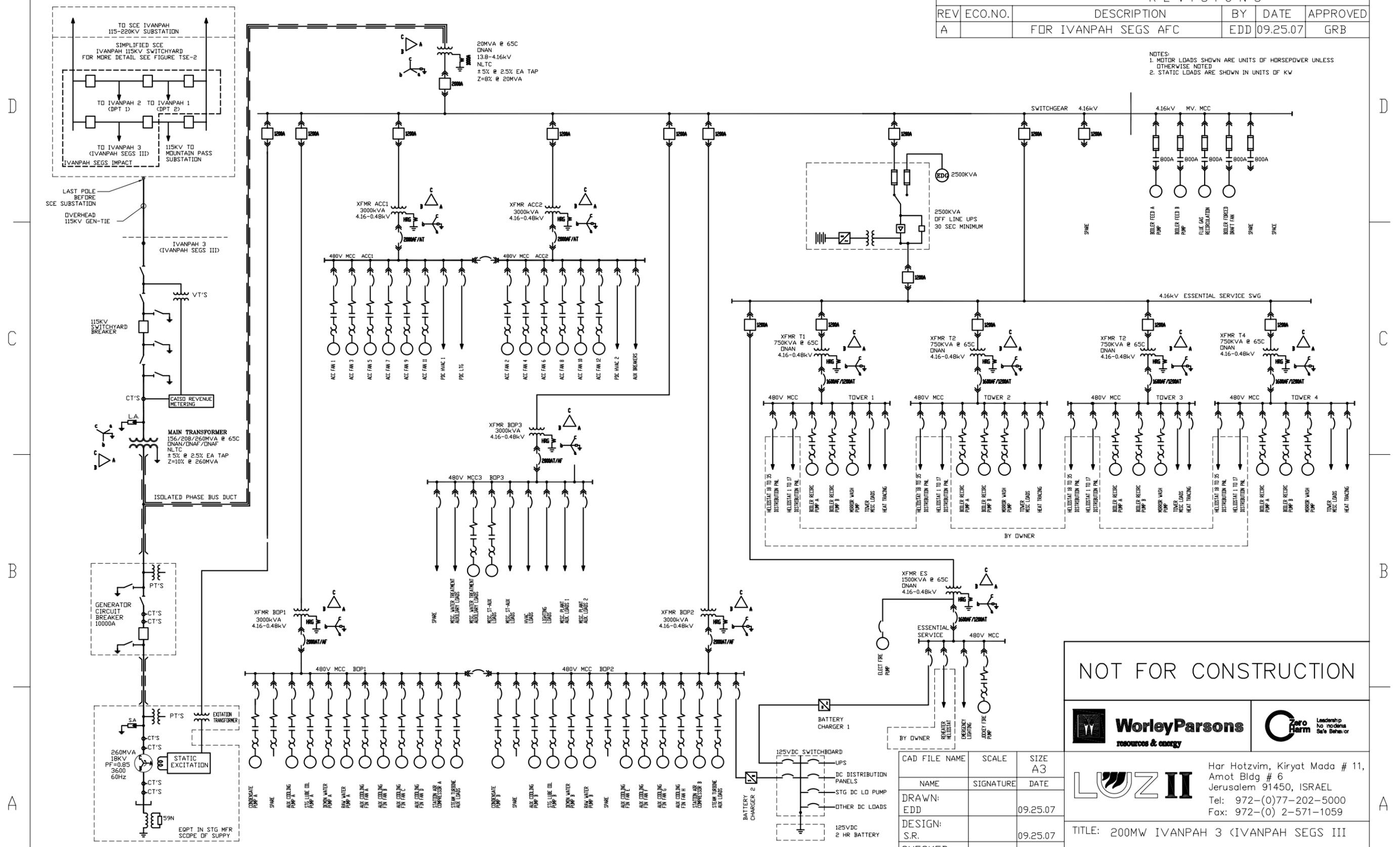
PROJECT NO.	DOCUMENT NO.	REV
LUZ 01	01-PB-E-D-201	A
SHEET: 1 of 1		

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FIGURE TSE-1a

REVISIONS					
REV	ECO.NO.	DESCRIPTION	BY	DATE	APPROVED
A		FDR IVANPAH SEGS AFC	EDD	09.25.07	GRB

NOTES:  
 1. MOTOR LOADS SHOWN ARE UNITS OF HORSEPOWER UNLESS OTHERWISE NOTED  
 2. STATIC LOADS ARE SHOWN IN UNITS OF KW



NOT FOR CONSTRUCTION



**LUZ II** Har Hotzvim, Kiryat Mada # 11, Amot Bldg # 6, Jerusalem 91450, ISRAEL  
 Tel: 972-(0)77-202-5000  
 Fax: 972-(0) 2-571-1059

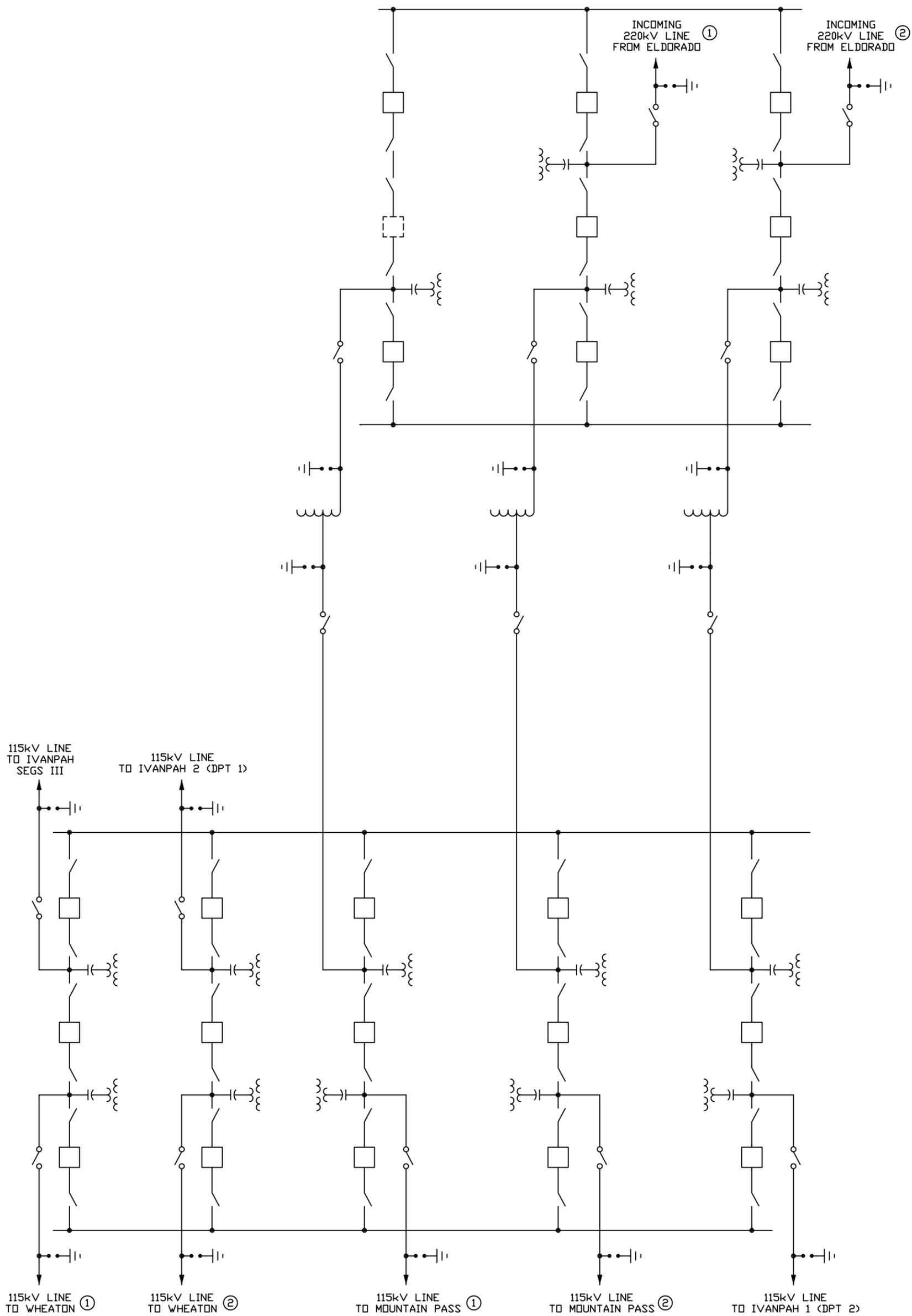
TITLE: 200MW IVANPAH 3 (IVANPAH SEGS III)  
 CAISO QUEUE 233)  
 OVERALL SINGLE LINE DIAGRAM

CAD FILE NAME	SCALE	SIZE
		A3
NAME	SIGNATURE	DATE
DRAWN: EDD		09.25.07
DESIGN: S.R.		09.25.07
CHECKED: J.S.		09.25.07
APPROVED: G.R.B.		09.25.07

PROJECT NO.	DOCUMENT NO.	REV
LUZ 01	07-PB-E-D-201	A
SHEET: 1 of 1		

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FIGURE TSE-1b



**Conceptual One Line of Proposed SCE  
220kV/115kV Substation Yard**

**Figure TSE-2**

Sept. 25, 2007

**Ivanpah Solar Electric  
Generating System**



**Worley Parsons**  
resources & energy



**Laramore, Douglass  
and Popham  
Consulting Engineers**

# 5.1 Air Quality

---

## 1. Coordination with the AQMD [Appendix B(g)(8)(A)]

*The information necessary for the air pollution control district where the project is located to complete a Determination of Compliance.*

### **Information required for the AFC to conform to the regulations:**

*a. Please provide a copy of the application for Authority to Construct and Permit to Operate with the Mojave Desert Air Quality Management District (District).*

**Response** – A copy of the applications for the Authority to Construct are provided as Attachments AQ-1A and AQ-1B.

*b. Please provide a copy of the District Notice of Completeness for the proposed project or communication from the district (e.g., email) stating that the application is complete.*

**Response** – The Applicant has provided the District with the information it requires and has paid the appropriate filing fees. The District has informed us that it sent a Notice of Completeness to the Applicant. A copy will be provided to the CEC as soon as it is received. The District point of contact for the Ivanpah SEGS is Mr. Sam Oktay who can be reached at (760) 245-1661 x 1610 or soktay@mdaqmd.ca.gov.

## ATTACHMENT AQ-1A

BrightSource Energy

September 18, 2007

Mojave Desert Air Quality Management District  
Attn: Richard Wales  
14306 Park Avenue  
Victorville, CA 92392-2310

Subject: Application for Authority to Construct  
Ivanpah Solar Electric Generating Station

Dear Mr. Wales:

Please find attached a copy of the Air Quality Section (and appendix) of the Application for Certification (AFC) for the proposed Ivanpah Solar Electric Generating Station (Ivanpah SEGS). This AFC was filed with the California Energy Commission on August 31, 2007. The AFC materials, together with the enclosed Mojave Desert AQMD (District) permit application forms and air quality modeling data on compact disc, are enclosed for your review.

This Application is being made by Solar Partners I, LLC; Solar Partners II, LLC; Solar Partners VIII, LLC, the owners of the three separate solar plants (the "Applicant"). These three project limited liability companies are Delaware limited liability companies. BrightSource Energy, Inc. (BrightSource), a Delaware corporation, is a technology and development company and the parent company of the limited liability companies. The Applicant will use BrightSource's solar thermal technology for Ivanpah SEGS.

Ivanpah SEGS is a 400-megawatt (MW) concentrating solar project located in San Bernardino County near the California-Nevada border. The project will be built in three phases: Ivanpah 1, the 100-MW plant in the southernmost portion of the project site (to be owned by Solar Partners II, LLC); Ivanpah 2, the 100-MW plant in the middle of the project site (to be owned by Solar Partners I, LLC); and Ivanpah 3, the 200-MW plant in the northern portion of the project site (to be owned by Solar Partners VIII, LLC). The phasing of this 400-MW project will facilitate construction and financing of all three plants. In particular, the phasing of the project will allow for the construction of the first 100-MW plant and shared facilities that is the subject of ongoing power sales agreement negotiations with a major California utility for qualifying renewable sources under California's Renewable Portfolio Standard (RPS), with the objective of achieving commercial operation of the first 100-MW plant in the 2010 to 2011 time frame.

Each 100-MW site for Ivanpah 1 and 2 requires about 850 acres (or 1.3 square miles); the 200-MW site for Ivanpah 3 is about 1,660 acres (or about 2.6 square miles). The total area required for all three plants and the shared facilities is

approximately 3,400 acres. The Applicant has applied for ROW grants from the Bureau of Land Management (BLM) for the use of this land and has been working cooperatively with the CEC, BLM and other permitting agencies.

The heliostat (or mirror) fields, that are the foundation for BrightSource's technology, focus solar energy on the power tower receivers near the center of each of the heliostat arrays. The solar field and power generation equipment are started each morning after sunrise once the incident solar insolation (i.e., solar radiation) builds up and are shut down in the evening when insolation drops below the level required to keep the steam turbines online. The solar energy heats water in the power towers and reheat boiler to make steam that runs the steam turbine generator. No intermediary fluid is used.

The electrical transmission interconnections will link each plant to the power grid by connecting the plant switchyard to a new Southern California Edison (SCE) substation (Ivanpah Substation) to be constructed between Ivanpah 1 and Ivanpah 2, on the north side of the transmission corridor. SCE will upgrade the existing 115-kV transmission line between the new Ivanpah Substation and the El Dorado Substation to 220 kV. This SCE upgrade is designed to serve other projects planned in the general vicinity and is not being built specifically for Ivanpah SEGS. It will provide sufficient capacity for Ivanpah SEGS and other projects SCE anticipates.

Each phase of the project includes a small package natural gas-fired start-up boiler to provide heat for plant start-up and during temporary cloud cover. The project's natural gas system will be connected to the Kern River Gas Transmission Line, which passes less than half a mile to the north of the project site. Raw water will be drawn daily from one of two onsite wells, located east of Ivanpah 2. Each well will have sufficient capacity to supply water for all three phases. Groundwater will go through a treatment system for use as boiler make-up water and to wash the heliostats. To save water in the site's desert environment, each plant will use a dry-cooling condenser. Water consumption is, therefore, minimal (estimated at no more than 100 acre-feet/year for all three phases). Each phase also includes a small onsite wastewater plant located in the power block that treats wastewater from domestic waste streams such as showers and toilets. A larger sewage package treatment plant will also be located at the Administration/Operations and Maintenance area, located between Ivanpah 1 and 2. Sewage sludge will be removed from the site by a sanitary service provider. No wastewater will be generated by the system, except for a small stream that will be treated and used for landscape irrigation. If necessary, a small filter/purification system will be used to provide potable water at the Administration Building.

The applicant anticipates that each of the three Ivanpah plants will be a separate facility under separate ownership and control. All three Ivanpah plants are being designed and developed by a single entity, and they will share some

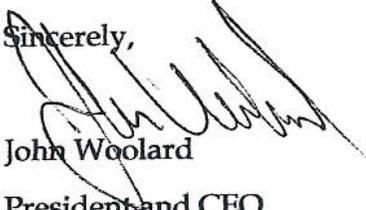
September 18, 2007

common utilities. Because the plants will be related, and in order to ensure that all cumulative impacts of their construction and operation are evaluated, a single application is being submitted for all three plants. Because each of the plants will under separate ownership and control, it is expected that each of the plants will be permitted separately. This procedure will ensure that all impacts of the project as a whole are properly considered, that responsibility for compliance during operations is appropriately allocated, and that agency review of the project is efficient and complete.

We have included a check for \$212 to cover the filing fees for 10 new permit units (three boilers, three fire pump engines, four emergency standby engines). We understand that the District will be billing Bright Source Energy for the Project Evaluation Fee deposit, in accordance with District Rule 301.

If you have any questions regarding this application, please contact Gary Rubenstein of Sierra Research at (916) 444-6666.

Sincerely,



John Woolard

President and CEO

BrightSource Energy, Inc.

enclosure

cc: (w/o enclosure)

Gary Rubenstein (Sierra Research)

Steve De Young

John Carrier (CH2M Hill)

CEC Dockets Office

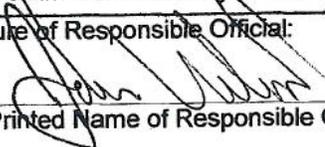
**MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT**  
 14306 Park Avenue, Victorville, CA 92392-2310  
 (760) 245-1661 Facsimile: (760) 245-2022

www.mdaqmd.ca.gov  
 Eldon Heaston  
 Executive Director

**APPLICATION FOR AUTHORITY TO CONSTRUCT AND PERMIT TO OPERATE**

Page 1 of 2: please type or print

REMIT \$212.00 WITH THIS DOCUMENT (\$121.00 FOR CHANGE OF OWNER)

1. Permit To Be Issued To (company name to receive permit): Solar Partners II, LLC		1a. Federal Tax ID No.: 36-4608152	
2. Mailing/Billing Address (for above company name): 1999 Harrison Street, Suite #500, Oakland, CA 94612			
3. Facility or Business License Name (for equipment location): Ivanpah 1			
4. Facility Address - Location of Equipment (if same as for company, enter "Same"): San Bernardino County near the California/Nevada border at Primm, NV		Location UTM or Lat/Long: UTME 640416 UTMN 3933369	
5. Contact Name/Title: Steve De Young, Environmental Manager	Email Address: steve@deyoung.org	Phone/Fax Nos.: 925-890-9714	
6. Application is hereby made for Authority To Construct (ATC) and Permit To Operate (PTO) the following equipment: Boiler, Emergency Engine, Fire pump Engine			
Air Pollution Control Equipment, if any (note that most APCE require a separate application):			
7. Application is for: <input checked="" type="checkbox"/> New Construction <input type="checkbox"/> Modification* <input type="checkbox"/> Change of Owner*		For modification or change of owner: *Current Permit Number: _____	
8. Type of Organization (check one): <input type="checkbox"/> Individual Owner <input type="checkbox"/> Partnership <input checked="" type="checkbox"/> Corporation <input type="checkbox"/> Utility <input type="checkbox"/> Local Agency <input type="checkbox"/> State Agency <input type="checkbox"/> Federal Agency			
9. General Nature of Business: Power Generation		Principal Product: Electricity	SIC Code (if known): 4911
10. Distances (feet and direction to closest): 3,000 ft Fenceline   5.8 miles Residence   6700 ft Business   40 miles School			
11. Facility Annual Throughput by Quarters (percent): 25 % Jan-Mar   25 % Apr-Jun   25 % Jul-Sep   25 % Oct-Dec		12. Expected Facility Operating Hours: 16 Hrs/Day   7 Days/Wk   52 Wks/Yr   5840 Total Hrs/Yr	
13. Do you claim Confidentiality of Data (if yes, state nature of data on reverse in Remarks)?			<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
14. Signature of Responsible Official: 		Official Title: President and CEO	
Typed or Printed Name of Responsible Official: John Woolard		Phone Number: 510-550-8464	Date Signed: 18-Sep-07
- For District Use Only -			
Application Number:	Invoice Number:	Permit Number:	Company/Facility Number:

**MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT  
GENERAL APPLICATION, continued**

Page 2 of 2: please type or print

**15. Stack Emissions Information:**

<u>Stack No.</u>	<u>Stack Height</u>	<u>Stack Diameter</u>	<u>Exhaust Temp</u>	<u>Exhaust Flow Rate</u>	<u>Exhaust Velocity</u>
1	130 ft	5.0 ft	430 F	157,076 acfm	133 ft/sec
2	30 ft	1.5 ft	922 F	19,049 acfm	180 ft/sec
3	20 ft	0.5 ft	848 F	1,484 acfm	126 ft/sec

(list additional stacks on a separate sheet)

Stack Height is the distance above ground level to discharge point (feet)

Stack Diameter is the diameter (or equivalent circular diameter) of discharge point (nearest tenth foot)

If using cross-sectional area (A in square feet), equivalent diameter is  $D = (1.273A)^{0.5}$

Exhaust Temp in degrees F, actual or estimated to nearest 50 deg F

Exhaust Flow Rate at discharge point in actual cubic feet per minute (ACFM)

Exhaust Velocity in feet per second, design or measured

**16. Remarks (basis for confidentiality of data, process description, modification description, etc.):**

If you wish to specify process information as proprietary or confidential, space is provided for this purpose.  
The kinds and rates of emissions may not be held confidential; emissions are subject to public disclosure.

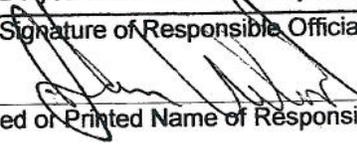
**MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT**  
 14306 Park Avenue, Victorville, CA 92392-2310  
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**Eldon Heaston**  
 Executive Director

**APPLICATION FOR AUTHORITY TO CONSTRUCT AND PERMIT TO OPERATE**

Page 1 of 2: please type or print

REMIT \$212.00 WITH THIS DOCUMENT (\$121.00 FOR CHANGE OF OWNER)

1. Permit To Be Issued To (company name to receive permit): Solar Partners I, LLC		1a. Federal Tax ID No.: 20-8812461	
2. Mailing/Billing Address (for above company name): 1999 Harrison Street, Suite #500, Oakland, CA 94612			
3. Facility or Business License Name (for equipment location): Ivanpah 2			
4. Facility Address - Location of Equipment (if same as for company, enter "Same"): San Bernardino County near the California/Nevada border at Primm, NV		Location UTM or Lat/Long: UTME 638785 UTMN 3935664	
5. Contact Name/Title: Steve De Young, Environmental Manager	Email Address: steve@deyoung.org	Phone/Fax Nos.: 925-890-9714	
6. Application is hereby made for Authority To Construct (ATC) and Permit To Operate (PTO) the following equipment: Boiler, Emergency Engines, Fire pump Engine			
Air Pollution Control Equipment, if any (note that most APCE require a separate application):			
7. Application is for: <input checked="" type="checkbox"/> New Construction <input type="checkbox"/> Modification* <input type="checkbox"/> Change of Owner*		For modification or change of owner: *Current Permit Number: _____	
8. Type of Organization (check one): <input type="checkbox"/> Individual Owner <input type="checkbox"/> Partnership <input checked="" type="checkbox"/> Corporation <input type="checkbox"/> Utility <input type="checkbox"/> Local Agency <input type="checkbox"/> State Agency <input type="checkbox"/> Federal Agency			
9. General Nature of Business: Power Generation		Principal Product: Electricity	SIC Code (if known): 4911
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11. Facility Annual Throughput by Quarters (percent): 25 % 25 % 25 % 25 % Jan-Mar Apr-Jun Jul-Sep Oct-Dec		12. Expected Facility Operating Hours: 16 7 52 5840 Hrs/Day Days/Wk Wks/Yr Total Hrs/Yr	
13. Do you claim Confidentiality of Data (if yes, state nature of data on reverse in Remarks)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
14. Signature of Responsible Official: 		Official Title: President and CEO	
Typed or Printed Name of Responsible Official: John Woolard		Phone Number: 510-550-8464	Date Signed: 18-Sep-07
- For District Use Only -			
Application Number:	Invoice Number:	Permit Number:	Company/Facility Number:

**MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT  
GENERAL APPLICATION, continued**

Page 2 of 2: please type or print

**15. Stack Emissions Information:**

<u>Stack No.</u>	<u>Stack Height</u>	<u>Stack Diameter</u>	<u>Exhaust Temp</u>	<u>Exhaust Flow Rate</u>	<u>Exhaust Velocity</u>
1	130 ft	5.0 ft	430 F	157,076 acfm	133 ft/sec
2	30 ft	1.5 ft	922 F	19,049 acfm	180 ft/sec
3	20 ft	0.5 ft	848 F	1,484 acfm	126 ft/sec

(list additional stacks on a separate sheet)

Stack Height is the distance above ground level to discharge point (feet)

Stack Diameter is the diameter (or equivalent circular diameter) of discharge point (nearest tenth foot)

If using cross-sectional area (A in square feet), equivalent diameter is  $D = (1.273A)^{0.5}$

Exhaust Temp in degrees F, actual or estimated to nearest 50 deg F

Exhaust Flow Rate at discharge point in actual cubic feet per minute (ACFM)

Exhaust Velocity in feet per second, design or measured

**16. Remarks (basis for confidentiality of data, process description, modification description, etc.):**

If you wish to specify process information as proprietary or confidential, space is provided for this purpose.  
The kinds and rates of emissions may not be held confidential; emissions are subject to public disclosure.

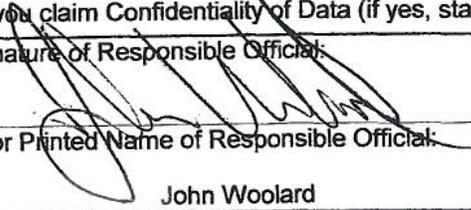
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**APPLICATION FOR AUTHORITY TO CONSTRUCT AND PERMIT TO OPERATE**

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2. Mailing/Billing Address (for above company name): 1999 Harrison Street, Suite #500, Oakland, CA 94612			
3. Facility or Business License Name (for equipment location): Ivanpah 3			
4. Facility Address - Location of Equipment (if same as for company, enter "Same"): San Bernardino County near the California/Nevada border at Primm, NV		Location UTM or Lat/Long: UTME 637569 UTMN 3937859	
5. Contact Name/Title: Steve De Young, Environmental Manager	Email Address: steve@deyoung.org	Phone/Fax Nos.: 925-890-9714	
6. Application is hereby made for Authority To Construct (ATC) and Permit To Operate (PTO) the following equipment: Boiler, Emergency Engines (2), Fire pump Engine			
Air Pollution Control Equipment, if any (note that most APCE require a separate application):			
7. Application is for: <input checked="" type="checkbox"/> New Construction <input type="checkbox"/> Modification* <input type="checkbox"/> Change of Owner*		For modification or change of owner: *Current Permit Number: _____	
8. Type of Organization (check one): <input type="checkbox"/> Individual Owner <input type="checkbox"/> Partnership <input checked="" type="checkbox"/> Corporation <input type="checkbox"/> Utility <input type="checkbox"/> Local Agency <input type="checkbox"/> State Agency <input type="checkbox"/> Federal Agency			
9. General Nature of Business: Power Generation		Principal Product: Electricity	SIC Code (if known): 4911
10. Distances (feet and direction to closest): 3700 ft Fenceline 5.1 miles Residence 18,000 Business 40 miles School			
11. Facility Annual Throughput by Quarters (percent): 25 % 25 % 25 % 25 % Jan-Mar Apr-Jun Jul-Sep Oct-Dec		12. Expected Facility Operating Hours: 16 7 52 5840 Hrs/Day Days/Wk Wks/Yr Total Hrs/Yr	
13. Do you claim Confidentiality of Data (if yes, state nature of data on reverse in Remarks)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
14. Signature of Responsible Official: 		Official Title: President and CEO	
Typed or Printed Name of Responsible Official: John Woolard		Phone Number: 510-550-8464	Date Signed: 18-Sep-07
- For District Use Only -			
Application Number:	Invoice Number:	Permit Number:	Company/Facility Number:

**MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT  
GENERAL APPLICATION, continued**

Page 2 of 2: please type or print

**15. Stack Emissions Information:**

<u>Stack No.</u>	<u>Stack Height</u>	<u>Stack Diameter</u>	<u>Exhaust Temp</u>	<u>Exhaust Flow Rate</u>	<u>Exhaust Velocity</u>
1	130 ft	5.0 ft	430 F	157,076 acfm	133 ft/sec
2	30 ft	1.5 ft	922 F	19,049 acfm	180 ft/sec
3	20 ft	0.5 ft	848 F	1,484 acfm	126 ft/sec

(list additional stacks on a separate sheet)

Stack Height is the distance above ground level to discharge point (feet)

Stack Diameter is the diameter (or equivalent circular diameter) of discharge point (nearest tenth foot)

If using cross-sectional area (A in square feet), equivalent diameter is  $D = (1.273A)^{0.5}$

Exhaust Temp in degrees F, actual or estimated to nearest 50 deg F

Exhaust Flow Rate at discharge point in actual cubic feet per minute (ACFM)

Exhaust Velocity in feet per second, design or measured

**16. Remarks (basis for confidentiality of data, process description, modification description, etc.):**

If you wish to specify process information as proprietary or confidential, space is provided for this purpose.  
The kinds and rates of emissions may not be held confidential; emissions are subject to public disclosure.

ATTACHMENT AQ-1B

# BrightSourceEnergy™

October 3, 2007

Mojave Desert Air Quality Management District  
Attn: Samuel Oktay  
14306 Park Avenue  
Victorville, CA 92392-2310

Subject: Application for Authority to Construct  
Ivanpah Solar Electric Generating Station

Dear Mr. Oktay:

We understand that the District requires an application form and filing fee for each permit unit, rather than for the project as a whole. Please find enclosed new application forms for the Ivanpah Solar Electric Generating Station. Additionally, please find enclosed a check for \$1908 (additional fees for 9 permit units).

If you have any questions regarding this application, please contact Gary Rubenstein of Sierra Research at (916) 444-6666.

Sincerely,



John Woolard  
President  
BrightSource Energy Inc.

enclosure

cc: (w/o enclosure)

Gary Rubenstein (Sierra Research)  
Steve De Young  
John Carrier (CH2M Hill)  
CEC Dockets Office



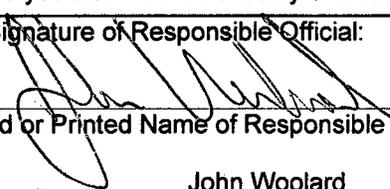
**MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT**  
 14306 Park Avenue, Victorville, CA 92392-2310  
 (760) 245-1661 Facsimile: (760) 245-2022

www.mdaqmd.ca.gov  
 Eldon Heaston  
 Executive Director

**APPLICATION FOR INTERNAL COMBUSTION ENGINE (I.C.E.) ONLY**

Page 1 of 2: please type or print

REMIT \$212.00 WITH THIS DOCUMENT (\$121.00 FOR CHANGE OF OWNER)

1. Permit To Be Issued To (company name to receive permit): Solar Partners I, LLC		1a. Federal Tax ID No.: 20-8812461	
2. Mailing/Billing Address (for above company name): 1999 Harrison Street, Suite #500, Oakland, CA 94612			
3. Facility or Business License Name (for equipment location): Ivanpah 2			
4. Facility Address - Location of Equipment (if same as for company, enter "Same"): San Bernadino County near the California/Nevada Border at Primm, NV		Facility UTM or Lat/Long: UTME 638785 UTMN 3935664	
5. Contact Name/Title: Steve De Young, Environmental Manager		Email Address: steve@deyoung.org	Phone/Fax Nos.: 925-890-9714
6. Application is hereby made for Authority To Construct (ATC) and Permit To Operate (PTO) the following equipment: Firepump Engine			
7. Application is for: <input checked="" type="checkbox"/> New Construction <input type="checkbox"/> Modification* <input type="checkbox"/> Change of Owner*		For modification or change of owner: *Current Permit Number: _____	
8. Type of Organization (check one): <input type="checkbox"/> Individual Owner <input type="checkbox"/> Partnership <input type="checkbox"/> Corporation <input type="checkbox"/> Utility <input type="checkbox"/> Local Agency <input type="checkbox"/> State Agency <input type="checkbox"/> Federal Agency			
9. Distances (feet and direction to closest): <u>3,000 ft</u> Fenceline <u>5.8 miles</u> Residence <u>6700 ft</u> Business <u>40 miles</u> School			
10. General Nature of Business: Power Generation		11. Principal Product: Electricity	
12. Facility Annual Throughput by Quarters (percent): <u>25</u> % <u>25</u> % <u>25</u> % <u>25</u> % Jan-Mar    Apr-Jun    Jul-Sep    Oct-Dec		13. Expected Operating Hours of IC Engine: <u>16</u> <u>7</u> <u>52</u> <u>5840</u> Hrs/Day    Days/Wk    Wks/Yr    Total Hrs/Yr	
14. Do you claim Confidentiality of Data (if yes, state nature of data in attachment)? <input type="checkbox"/> Yes <input type="checkbox"/> No			
15. Signature of Responsible Official: 		Official Title: President and CEO	
Typed or Printed Name of Responsible Official: John Woolard		Phone Number: 510-550-8464	Date Signed: 10/3/07
- For District Use Only -			
Application Number:	Invoice Number:	Permit Number:	Company/Facility Number:

**MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT  
I.C.E. APPLICATION, continued**

Page 2 of 2: please type or print

**16. INFORMATION ON I.C.E.:**

Manufacturer: \_\_\_\_\_ Clarke (or eq.) \_\_\_\_\_  
 Model No.: JU6H-UF62 California ATCM Tier 2 Serial No.: unk  
 Number of Cylinders: 6 Year of Manufacture: 2007 (or later)  
 Rating: 240 BHP Speed: 2600 RPM  
 I.C.E. is?  New  Existing Date Installed (MM/YYYY): \_\_\_\_\_  
 Prime  Standby  Emergency  Portable (Yes or No)?: No  
 CARB engine certification: Family: \_\_\_\_\_ Certification EO#: \_\_\_\_\_  
 Is this engine included in a Demand Response plan?: Yes  No   
 Type of Fuel(s): Natural Gas  Digester Gas  Ethanol  Landfill Gas   
 Propane  CARB Diesel  Methanol  Other: \_\_\_\_\_  
 Max fuel usage per hour: 10.3 Fuel units (ft<sup>3</sup>, gal, etc.): gal  
 Engine Lat/Long or UTM Coordinates: UTME 638801 UTMN 3935660  
 Exhaust Stack Height (feet): 20 Inside Diameter (inches): 6 Y/N: Vertical? Y Capped? N  
 Is this I.C.E. (select all that apply):  
 Direct Injected?  After Cooled?   
 Turbo Charged?  Inter Cooled?   
 Timing Retarded?  Other - Please specify: \_\_\_\_\_

**17. EMISSION RATES:**

Pollutant	at Max.Load	Units	Origin of Emission Rate data: Manufacturer or Source Test	
Oxides of Nitrogen (NOx)	4.41	g/hp-hr	M	___
Oxides of Sulfur (SOx)	0.00499	g/hp-hr	___	___
Carbon Monoxide (CO)	0.61	g/hp-hr	M	___
Particulates (PM10)	0.09	g/hp-hr	M	___
Total Hydrocarbons (VOC)	0.49	g/hp-hr	M	___

**18. EMISSION CONTROL EQUIPMENT:** Add on emission control equipment?  Yes  No

If yes: Manufacturer: \_\_\_\_\_ Model No.: \_\_\_\_\_  
 Serial No.: \_\_\_\_\_ \*CARB EO#: \_\_\_\_\_  
 Type: SCR:  Particulate Trap\*:  Ammonia Injection:  Water Injection:   
 Non-S CR:  Exhaust Gas Recirc\*:  Oxidation Catalyst\*:   
 Other - Please specify: \_\_\_\_\_

**19. INFORMATION OF ITEM BEING POWERED:** This I.C.E. is used to power:

Electrical Generator  Compressor  Pump   
 Paint Spray Gun  Conveyor or Drive  Fire Pump   
 Other - Please specify: \_\_\_\_\_  
 Manufacturer: \_\_\_\_\_  
 Model No.: \_\_\_\_\_ Serial No.: \_\_\_\_\_  
 Type, Size or Rating: \_\_\_\_\_

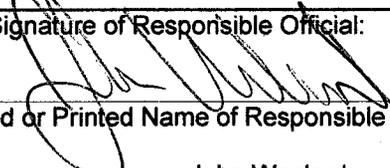
**MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT**  
 14306 Park Avenue, Victorville, CA 92392-2310  
 (760) 245-1661 Facsimile: (760) 245-2022

www.mdaqmd.ca.gov  
 Eldon Heaston  
 Executive Director

**APPLICATION FOR INTERNAL COMBUSTION ENGINE (I.C.E.) ONLY**

Page 1 of 2: please type or print

REMIT \$212.00 WITH THIS DOCUMENT (\$121.00 FOR CHANGE OF OWNER)

1. Permit To Be Issued To (company name to receive permit): Solar Partners I, LLC		1a. Federal Tax ID No.: 20-8812461	
2. Mailing/Billing Address (for above company name): 1999 Harrison Street, Suite #500, Oakland, CA 94612			
3. Facility or Business License Name (for equipment location): Ivanpah 2			
4. Facility Address - Location of Equipment (if same as for company, enter "Same"): San Bernadino County near the California/Nevada Border at Primm, NV		Facility UTM or Lat/Long: UTME 638785 UTMN 3935664	
5. Contact Name/Title: Steve De Young, Environmental Manager		Email Address: steve@deyoung.org	Phone/Fax Nos.: 925-890-9714
6. Application is hereby made for Authority To Construct (ATC) and Permit To Operate (PTO) the following equipment: Emergency Engine			
7. Application is for: <input checked="" type="checkbox"/> New Construction <input type="checkbox"/> Modification* <input type="checkbox"/> Change of Owner*		For modification or change of owner: *Current Permit Number: _____	
8. Type of Organization (check one): <input type="checkbox"/> Individual Owner <input type="checkbox"/> Partnership <input type="checkbox"/> Corporation <input type="checkbox"/> Utility <input type="checkbox"/> Local Agency <input type="checkbox"/> State Agency <input type="checkbox"/> Federal Agency			
9. Distances (feet and direction to closest): 3,000 ft Fenceline 5.8 miles Residence 6700 ft Business 40 miles School			
10. General Nature of Business: Power Generation		11. Principal Product: Electricity	
12. Facility Annual Throughput by Quarters (percent): 25 % 25 % 25 % 25 % Jan-Mar Apr-Jun Jul-Sep Oct-Dec		13. Expected Operating Hours of IC Engine: 16 7 52 5840 Hrs/Day Days/Wk Wks/Yr Total Hrs/Yr	
14. Do you claim Confidentiality of Data (if yes, state nature of data in attachment)? <input type="checkbox"/> Yes <input type="checkbox"/> No			
15. Signature of Responsible Official: 		Official Title: President and CEO	
Typed or Printed Name of Responsible Official: John Woolard		Phone Number: 510-550-8464	Date Signed: 10/3/07
- For District Use Only -			
Application Number:	Invoice Number:	Permit Number:	Company/Facility Number:

**MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT  
I.C.E. APPLICATION, continued**

Page 2 of 2: please type or print

**16. INFORMATION ON I.C.E.:**

Manufacturer: Caterpillar (or eq.)  
 Model No.: 3516C-HD Serial No.: unk  
 Number of Cylinders: 16 Year of Manufacture: 2007 (or later)  
 Rating: 3750 BHP Speed: 1800 RPM  
 I.C.E. is?  New  Existing Date Installed (MM/YYYY): \_\_\_\_\_  
 Prime  Standby  Emergency  Portable (Yes or No)? No  
 CARB engine certification: Family: 7CPXL78.1T2E Certification EO#: U-R-001-0317  
 Is this engine included in a Demand Response plan?: Yes  No   
 Type of Fuel(s): Natural Gas  Digester Gas  Ethanol  Landfill Gas   
                   Propane  CARB Diesel  Methanol  Other: \_\_\_\_\_  
 Max fuel usage per hour: 173.3 Fuel units (ft<sup>3</sup>, gal, etc.): gal  
 Engine Lat/Long or UTM Coordinates: UTME 638811 UTMN 3935707  
 Exhaust Stack Height (feet): 30 Inside Diameter (inches): 18 Y/N: Vertical? Y Capped? N  
 Is this I.C.E. (select all that apply):  
 Direct Injected?  Yes After Cooled?  Yes  
 Turbo Charged?  Yes Inter Cooled?   
 Timing Retarded?  Other - Please specify: \_\_\_\_\_

**17. EMISSION RATES:**

Pollutant	at Max.Load	Units	Origin of Emission Rate data:	
			Manufacturer or	Source Test
Oxides of Nitrogen (NOx)	5.05	g/hp-hr	M	_____
Oxides of Sulfur (SOx)	0.00451	g/hp-hr	_____	_____
Carbon Monoxide (CO)	0.41	g/hp-hr	M	_____
Particulates (PM10)	0.036	g/hp-hr	M	_____
Total Hydrocarbons (VOC)	0.1	g/hp-hr	M	_____

**18. EMISSION CONTROL EQUIPMENT:** Add on emission control equipment?  Yes  No

If yes: Manufacturer: \_\_\_\_\_ Model No.: \_\_\_\_\_  
 Serial No.: \_\_\_\_\_ \*CARB EO#: \_\_\_\_\_  
 Type: SCR:  Particulate Trap\*:  Ammonia Injection:  Water Injection:   
 Non-S CR:  Exhaust Gas Recirc\*:  Oxidation Catalyst\*:   
 Other - Please specify: \_\_\_\_\_

**19. INFORMATION OF ITEM BEING POWERED:** This I.C.E. is used to power:

Electrical Generator  Compressor  Pump   
 Paint Spray Gun  Conveyor or Drive  Fire Pump   
 Other - Please specify: \_\_\_\_\_  
 Manufacturer: \_\_\_\_\_  
 Model No.: \_\_\_\_\_ Serial No.: \_\_\_\_\_  
 Type, Size or Rating: \_\_\_\_\_

**MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT**

14306 Park Avenue, Victorville, CA 92392-2310  
 (760) 245-1661 Facsimile: (760) 245-2022

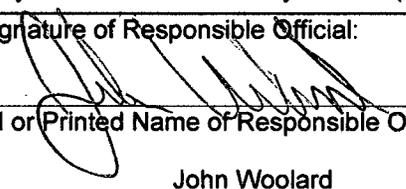
www.mdaqmd.ca.gov

Eldon Heaston  
 Executive Director

**APPLICATION FOR EXTERNAL COMBUSTION ENGINE (BOILER, ETC.) ONLY**

Page 1 of 2: please type or print

REMIT \$212.00 WITH THIS DOCUMENT (\$121.00 FOR CHANGE OF OWNER)

1. Permit To Be Issued To (company name to receive permit): Solar Partners I, LLC		1a. Federal Tax ID No.: 20-8812461	
2. Mailing/Billing Address (for above company name): 1999 Harrison Street, Suite #500, Oakland, CA 94612			
3. Facility or Business License Name (for equipment location): Ivanpah 2			
4. Facility Address - Location of Equipment (if same as for company, enter "Same"): San Bernadino County near the California/Nevada Border at Primm, NV		Facility UTM or Lat/Long: UTME 638785 UTMN 3935664	
5. Contact Name/Title: Steve De Young, Environmental Manager		Email Address: steve@deyoung.org	Phone/Fax Nos.: 925-890-9714
6. Application is hereby made for Authority To Construct (ATC) and Permit To Operate (PTO) the following equipment: Boiler			
7. Application is for: <input checked="" type="checkbox"/> New Construction <input type="checkbox"/> Modification* <input type="checkbox"/> Change of Owner*		For modification or change of owner: *Current Permit Number: _____	
8. Type of Organization (check one): <input type="checkbox"/> Individual Owner <input type="checkbox"/> Partnership <input checked="" type="checkbox"/> Corporation <input type="checkbox"/> Utility <input type="checkbox"/> Local Agency <input type="checkbox"/> State Agency <input type="checkbox"/> Federal Agency			
9. Distances (feet and direction to closest): 3,000 Fenceline 5.8 miles Residence 6,700 ft Business 40 miles School			
10. General Nature of Business: Power Generation		11. Principal Product: Electricity	
12. Facility Annual Throughput by Quarters (percent): 25 % 25 % 25 % 25 % Jan-Mar Apr-Jun Jul-Sep Oct-Dec		13. Facility Operating Hours: 16 7 52 5840 Hrs/Day Days/Wk Wks/Yr Total Hrs/Yr	
14. Do you claim Confidentiality of Data (if yes, state nature of data in attachment)? <input type="checkbox"/> Yes <input type="checkbox"/> No			
15. Signature of Responsible Official: 		Official Title: President and CEO	
Typed or Printed Name of Responsible Official: John Woolard		Phone Number: 510-550-8464	Date Signed: 10/3/07
- For District Use Only -			
Application Number:	Invoice Number:	Permit Number:	Company/Facility Number:

**MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT  
EXTERNAL COMBUSTION APPLICATION, continued**

Page 2 of 2: please type or print

**16. INFORMATION ON EQUIPMENT:**

Boiler  Dryer  Furnace  Heater  Kiln  Oven  Other, specify: \_\_\_\_\_

Manufacturer: \_\_\_\_\_ Nebraska boiler (or equiv.)

Model No.: \_\_\_\_\_ NSX-G-120 Serial No.: \_\_\_\_\_ unk.

Maximum heat input rating (use Higher Heating Value): \_\_\_\_\_ 231.1 \_\_\_\_\_ MMBtu/hr or kW

Burner Manufacturer: \_\_\_\_\_ Natcom \_\_\_\_\_ Burner Model No.: \_\_\_\_\_ Low-Nox \_\_\_\_\_

Number of burners: \_\_\_\_\_ 1 \_\_\_\_\_ Burner max heat input rating: \_\_\_\_\_ 231.1 \_\_\_\_\_ MMBtu/hr or kW

Percent excess air (or n/a): \_\_\_\_\_ 13.9 \_\_\_\_\_ Operating temps (C or F): \_\_\_\_\_ unk. \_\_\_\_\_ Av. \_\_\_\_\_ unk. \_\_\_\_\_ Max \_\_\_\_\_

Specify Primary Fuel (\*attach fuel analysis for these fuels specifying HHV and sulfur content):

Natural Gas  LPG (Propane)  CARB Diesel  Coal\*  Petroleum Coke\*

Digester Gas\*  Landfill Gas\*  Refinery Gas\*  Other,\* specify: \_\_\_\_\_

Max hourly primary fuel usage: \_\_\_\_\_ 225,000 \_\_\_\_\_ Fuel units (ft<sup>3</sup>, gal, etc.): \_\_\_\_\_ cu ft \_\_\_\_\_

If secondary fuel is proposed, specify: \_\_\_\_\_ Max hourly usage: \_\_\_\_\_

Feedstock type and max process rate (specify units): \_\_\_\_\_ 220,000 lb/hr steam \_\_\_\_\_

Unit Lat/Long or UTM Coordinates: \_\_\_\_\_ UTME E 638785 UTMN 3935664 \_\_\_\_\_

Max annual hours: \_\_\_\_\_ 1,460 \_\_\_\_\_ Exhaust Stack Height (feet): 130 Inside Diameter (inches): \_\_\_\_\_ 60 \_\_\_\_\_

**17. EMISSION CONTROLS: Check all that apply:**

- Low NOx Burner  Oxygen Trim  Flue or Exhaust Gas Recirculation (FGR or EGR)  
 Oxidation Catalyst  Selective Catalytic Reduction (SCR)  Selective Non-Catalytic Reduction (SNCR)  
 Afterburner  ESP  Baghouse  Other - Please specify: \_\_\_\_\_

**18. MAX EMISSION RATES (CONTROLLED):**

Pollutant	Concentration ppmvd or gr/dscf	Mass pounds/hour
Oxides of Nitrogen (NOx)	9	2.5
Oxides of Sulfur (SOx)	1.7	0.64
Carbon Monoxide (CO)	25	4.23
Total Particulates (TSP or PM30)	0.005	1.71
Coarse Respirable Particulates (PM10)	0.005	1.71
Fine Respirable Particulates (PM2.5)	0.005	1.71
Total Organics (TOG)	1.4	0.14
Volatile Organic Compounds (VOC, ROG or NMOG)	1.4	0.14

**19. DRYERS ONLY Check one:**

Centrifugal  Chip  Fluidized Bed  Rotary  Spray  Other, specify: \_\_\_\_\_

**20. FURNACE ONLY Check one:**

Annealing  Burnoff  Calcining  Crucible  Cupola  Diffusion  Electric  Forge  Pot  
 Holding  Heat Treating  Melting  Reverbatory  Rotary  Sweating  Oxide Growth

**21. OVEN ONLY Check one:**

Bakery  Baking  Curing  Drying  Fluidized Bed  Stripping  Solder Reflow  
 Roasting, specify type: \_\_\_\_\_ Firing Method:  Direct  Indirect

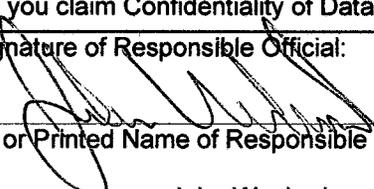
**MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT**  
 14306 Park Avenue, Victorville, CA 92392-2310  
 (760) 245-1661 Facsimile: (760) 245-2022

www.mdaqmd.ca.gov  
 Eldon Heaston  
 Executive Director

**APPLICATION FOR INTERNAL COMBUSTION ENGINE (I.C.E.) ONLY**

Page 1 of 2: please type or print

REMIT \$212.00 WITH THIS DOCUMENT (\$121.00 FOR CHANGE OF OWNER)

1. Permit To Be Issued To (company name to receive permit): Solar Partners II, LLC		1a. Federal Tax ID No.: 36-46018152	
2. Mailing/Billing Address (for above company name): 1999 Harrison Street, Suite #500, Oakland, CA 94612			
3. Facility or Business License Name (for equipment location): Ivanpah 1			
4. Facility Address - Location of Equipment (if same as for company, enter "Same"): San Bernadino County near the California/Nevada Border at Primm, NV		Facility UTM or Lat/Long: UTME 640416 UTMN 3933369	
5. Contact Name/Title: Steve De Young, Environmental Manager		Email Address: steve@deyoung.org	Phone/Fax Nos.: 925-890-9714
6. Application is hereby made for Authority To Construct (ATC) and Permit To Operate (PTO) the following equipment: Firepump Engine			
7. Application is for: <input checked="" type="checkbox"/> New Construction <input type="checkbox"/> Modification* <input type="checkbox"/> Change of Owner*		For modification or change of owner: *Current Permit Number: _____	
8. Type of Organization (check one): <input type="checkbox"/> Individual Owner <input type="checkbox"/> Partnership <input type="checkbox"/> Corporation <input type="checkbox"/> Utility <input type="checkbox"/> Local Agency <input type="checkbox"/> State Agency <input type="checkbox"/> Federal Agency			
9. Distances (feet and direction to closest): 3,000 ft Fenceline 5.8 miles Residence 6700 ft Business 40 miles School			
10. General Nature of Business: Power Generation		11. Principal Product: Electricity	
12. Facility Annual Throughput by Quarters (percent): 25 % 25 % 25 % 25 % Jan-Mar Apr-Jun Jul-Sep Oct-Dec		13. Expected Operating Hours of IC Engine: 16 7 52 5840 Hrs/Day Days/Wk Wks/Yr Total Hrs/Yr	
14. Do you claim Confidentiality of Data (if yes, state nature of data in attachment)? <input type="checkbox"/> Yes <input type="checkbox"/> No			
15. Signature of Responsible Official: 		Official Title: President and CEO	
Typed or Printed Name of Responsible Official: John Woolard		Phone Number: 510-550-8464	Date Signed: 10/3/07
- For District Use Only -			
Application Number:	Invoice Number:	Permit Number:	Company/Facility Number:

**MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT  
I.C.E. APPLICATION, continued**

Page 2 of 2: please type or print

**16. INFORMATION ON I.C.E.:**

Manufacturer: Clarke (or eq.)  
 Model No.: JU6H-UF62 California ATCM Tier 2 Serial No.: unk  
 Number of Cylinders: 6 Year of Manufacture: 2007 (or later)  
 Rating: 240 BHP Speed: 2600 RPM  
 I.C.E. is?  New  Existing Date Installed (MM/YYYY): \_\_\_\_\_  
 Prime  Standby  Emergency  Portable (Yes or No)? No  
 CARB engine certification: Family: \_\_\_\_\_ Certification EO#: \_\_\_\_\_  
 Is this engine included in a Demand Response plan?: Yes  No   
 Type of Fuel(s): Natural Gas  Digester Gas  Ethanol  Landfill Gas   
                   Propane  CARB Diesel  Methanol  Other: \_\_\_\_\_  
 Max fuel usage per hour: 10.3 Fuel units (ft<sup>3</sup>, gal, etc.): gal  
 Engine Lat/Long or UTM Coordinates: UTME 640399 UTMN 3933373  
 Exhaust Stack Height (feet): 20 Inside Diameter (inches): 6 Y/N: Vertical? Y Capped? N  
 Is this I.C.E. (select all that apply):  
 Direct Injected?  After Cooled?   
 Turbo Charged?  Inter Cooled?   
 Timing Retarded?  Other - Please specify: \_\_\_\_\_

**17. EMISSION RATES:**

Pollutant	at Max. Load	Units	Origin of Emission Rate data:	
			Manufacturer	or Source Test
Oxides of Nitrogen (NOx)	4.41	g/hp-hr	M	_____
Oxides of Sulfur (SOx)	0.00499	g/hp-hr	_____	_____
Carbon Monoxide (CO)	0.61	g/hp-hr	M	_____
Particulates (PM10)	0.09	g/hp-hr	M	_____
Total Hydrocarbons (VOC)	0.49	g/hp-hr	M	_____

**18. EMISSION CONTROL EQUIPMENT:** Add on emission control equipment?  Yes  No

If yes: Manufacturer: \_\_\_\_\_ Model No.: \_\_\_\_\_  
 Serial No.: \_\_\_\_\_ \*CARB EO#: \_\_\_\_\_  
 Type: SCR:  Particulate Trap\*:  Ammonia Injection:  Water Injection:   
 Non-S CR:  Exhaust Gas Recirc\*:  Oxidation Catalyst\*:   
 Other - Please specify: \_\_\_\_\_

**19. INFORMATION OF ITEM BEING POWERED:** This I.C.E. is used to power:

Electrical Generator  Compressor  Pump   
 Paint Spray Gun  Conveyor or Drive  Fire Pump   
 Other - Please specify: \_\_\_\_\_  
 Manufacturer: \_\_\_\_\_  
 Model No.: \_\_\_\_\_ Serial No.: \_\_\_\_\_  
 Type, Size or Rating: \_\_\_\_\_

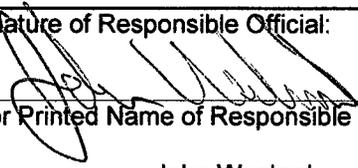
**MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT**  
 14306 Park Avenue, Victorville, CA 92392-2310  
 (760) 245-1661 Facsimile: (760) 245-2022

www.mdaqmd.ca.gov  
 Eldon Heaston  
 Executive Director

**APPLICATION FOR INTERNAL COMBUSTION ENGINE (I.C.E.) ONLY**

Page 1 of 2: please type or print

REMIT \$212.00 WITH THIS DOCUMENT (\$121.00 FOR CHANGE OF OWNER)

1. Permit To Be Issued To (company name to receive permit): Solar Partners II, LLC		1a. Federal Tax ID No.: 36-46018152	
2. Mailing/Billing Address (for above company name): 1999 Harrison Street, Suite #500, Oakland, CA 94612			
3. Facility or Business License Name (for equipment location): Ivanpah 1			
4. Facility Address - Location of Equipment (if same as for company, enter "Same"): San Bernadino County near the California/Nevada Border at Primm, NV		Facility UTM or Lat/Long: UTME 640416 UTMN 3933369	
5. Contact Name/Title: Steve De Young, Environmental Manager		Email Address: steve@deyoung.org	Phone/Fax Nos.: 925-890-9714
6. Application is hereby made for Authority To Construct (ATC) and Permit To Operate (PTO) the following equipment: Emergency Engine			
7. Application is for: <input checked="" type="checkbox"/> New Construction <input type="checkbox"/> Modification* <input type="checkbox"/> Change of Owner*		For modification or change of owner: *Current Permit Number: _____	
8. Type of Organization (check one): <input type="checkbox"/> Individual Owner <input type="checkbox"/> Partnership <input type="checkbox"/> Corporation <input type="checkbox"/> Utility <input type="checkbox"/> Local Agency <input type="checkbox"/> State Agency <input type="checkbox"/> Federal Agency			
9. Distances (feet and direction to closest): 3,000 ft Fenceline 5.8 miles Residence 6700 ft Business 40 miles School			
10. General Nature of Business: Power Generation		11. Principal Product: Electricity	
12. Facility Annual Throughput by Quarters (percent): 25 % Jan-Mar 25 % Apr-Jun 25 % Jul-Sep 25 % Oct-Dec		13. Expected Operating Hours of IC Engine: 16 Hrs/Day 7 Days/Wk 52 Wks/Yr 5840 Total Hrs/Yr	
14. Do you claim Confidentiality of Data (if yes, state nature of data in attachment)? <input type="checkbox"/> Yes <input type="checkbox"/> No			
15. Signature of Responsible Official: 		Official Title: President and CEO	
Typed or Printed Name of Responsible Official: John Woolard		Phone Number: 510-550-8464	Date Signed: 10/3/07
- For District Use Only -			
Application Number:	Invoice Number:	Permit Number:	Company/Facility Number:

**MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT  
I.C.E. APPLICATION, continued**

Page 2 of 2: please type or print

**16. INFORMATION ON I.C.E.:**

Manufacturer: Caterpillar (or eq.)  
 Model No.: 3516C-HD Serial No.: unk  
 Number of Cylinders: 16 Year of Manufacture: 2007 (or later)  
 Rating: 3750 BHP Speed: 1800 RPM  
 I.C.E. is?  New  Existing Date Installed (MM/YYYY): \_\_\_\_\_  
 Prime  Standby  Emergency  Portable (Yes or No)? No  
 CARB engine certification: Family: 7CPXL78.1T2E Certification EO#: U-R-001-0317  
 Is this engine included in a Demand Response plan?: Yes  No   
 Type of Fuel(s): Natural Gas  Digester Gas  Ethanol  Landfill Gas   
 Propane  CARB Diesel  Methanol  Other: \_\_\_\_\_  
 Max fuel usage per hour: 173.3 Fuel units (ft<sup>3</sup>, gal, etc.): gal  
 Engine Lat/Long or UTM Coordinates: UTME 640390 UTMN 3933326  
 Exhaust Stack Height (feet): 30 Inside Diameter (inches): 18 Y/N: Vertical? Y Capped? N  
 Is this I.C.E. (select all that apply):  
 Direct Injected?  Yes After Cooled?  Yes  
 Turbo Charged?  Yes Inter Cooled?   
 Timing Retarded?  Other - Please specify: \_\_\_\_\_

**17. EMISSION RATES:**

Pollutant	at Max.Load	Units	Origin of Emission Rate data:	
			Manufacturer or	Source Test
Oxides of Nitrogen (NOx)	5.05	g/hp-hr	M	_____
Oxides of Sulfur (SOx)	0.00451	g/hp-hr	_____	_____
Carbon Monoxide (CO)	0.41	g/hp-hr	M	_____
Particulates (PM10)	0.036	g/hp-hr	M	_____
Total Hydrocarbons (VOC)	0.1	g/hp-hr	M	_____

**18. EMISSION CONTROL EQUIPMENT:** Add on emission control equipment?  Yes  No

If yes: Manufacturer: \_\_\_\_\_ Model No.: \_\_\_\_\_  
 Serial No.: \_\_\_\_\_ \*CARB EO#: \_\_\_\_\_  
 Type: SCR:  Particulate Trap\*:  Ammonia Injection:  Water Injection:   
 Non-S CR:  Exhaust Gas Recirc\*:  Oxidation Catalyst\*:   
 Other - Please specify: \_\_\_\_\_

**19. INFORMATION OF ITEM BEING POWERED:** This I.C.E. is used to power:

Electrical Generator  Compressor  Pump   
 Paint Spray Gun  Conveyor or Drive  Fire Pump   
 Other - Please specify: \_\_\_\_\_  
 Manufacturer: \_\_\_\_\_  
 Model No.: \_\_\_\_\_ Serial No.: \_\_\_\_\_  
 Type, Size or Rating: \_\_\_\_\_

**MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT**

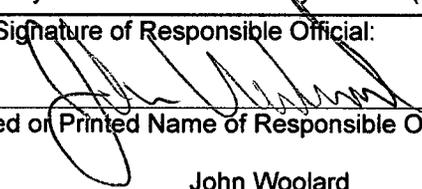
14306 Park Avenue, Victorville, CA 92392-2310  
 (760) 245-1661 Facsimile: (760) 245-2022

www.mdaqmd.ca.gov  
 Eldon Heaston  
 Executive Director

**APPLICATION FOR EXTERNAL COMBUSTION ENGINE (BOILER, ETC.) ONLY**

Page 1 of 2: please type or print

REMIT \$212.00 WITH THIS DOCUMENT (\$121.00 FOR CHANGE OF OWNER)

1. Permit To Be Issued To (company name to receive permit): Solar Partners II, LLC		1a. Federal Tax ID No.: 36-46018152	
2. Mailing/Billing Address (for above company name): 1999 Harrison Street, Suite #500, Oakland, CA 94612			
3. Facility or Business License Name (for equipment location): Ivanpah 1			
4. Facility Address - Location of Equipment (if same as for company, enter "Same"): San		Facility UTM or Lat/Long: UTME 640416 UTMN 3933369	
5. Contact Name/Title: Steve De Young, Environmental Manager		Email Address: steve@deyoung.org	Phone/Fax Nos.: 925-890-9714
6. Application is hereby made for Authority To Construct (ATC) and Permit To Operate (PTO) the following equipment: Boiler			
7. Application is for: <input checked="" type="checkbox"/> New Construction <input type="checkbox"/> Modification* <input type="checkbox"/> Change of Owner*		For modification or change of owner: *Current Permit Number: _____	
8. Type of Organization (check one): <input type="checkbox"/> Individual Owner <input type="checkbox"/> Partnership <input checked="" type="checkbox"/> Corporation <input type="checkbox"/> Utility <input type="checkbox"/> Local Agency <input type="checkbox"/> State Agency <input type="checkbox"/> Federal Agency			
9. Distances (feet and direction to closest): 3,000 Fenceline 5.8 miles Residence 6,700 ft Business 40 miles School			
10. General Nature of Business: Power Generation		11. Principal Product: Electricity	
12. Facility Annual Throughput by Quarters (percent): 25 % 25 % 25 % 25 % Jan-Mar Apr-Jun Jul-Sep Oct-Dec		13. Facility Operating Hours: 16 7 52 5840 Hrs/Day Days/Wk Wks/Yr Total Hrs/Yr	
14. Do you claim Confidentiality of Data (if yes, state nature of data in attachment)? <input type="checkbox"/> Yes <input type="checkbox"/> No			
15. Signature of Responsible Official: 		Official Title: President and CEO	
Typed or Printed Name of Responsible Official: John Woolard		Phone Number: 510-550-8464	Date Signed: 10/3/07
- For District Use Only -			
Application Number:	Invoice Number:	Permit Number:	Company/Facility Number:

**MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT  
EXTERNAL COMBUSTION APPLICATION, continued**

Page 2 of 2: please type or print

**16. INFORMATION ON EQUIPMENT:**

Boiler  Dryer  Furnace  Heater  Kiln  Oven  Other, specify: \_\_\_\_\_

Manufacturer: \_\_\_\_\_ Nebraska boiler (or equiv.)

Model No.: \_\_\_\_\_ NSX-G-120 Serial No.: \_\_\_\_\_ unk.

Maximum heat input rating (use Higher Heating Value): \_\_\_\_\_ 231.1 \_\_\_\_\_ MMBtu/hr or kW

Burner Manufacturer: \_\_\_\_\_ Natcom Burner Model No.: \_\_\_\_\_ Low-Nox

Number of burners: \_\_\_\_\_ 1 Burner max heat input rating: \_\_\_\_\_ 231.1 \_\_\_\_\_ MMBtu/hr or kW

Percent excess air (or n/a): \_\_\_\_\_ 13.9 Operating temps (C or F): \_\_\_\_\_ unk. Av. \_\_\_\_\_ unk. Max \_\_\_\_\_

Specify Primary Fuel (\*attach fuel analysis for these fuels specifying HHV and sulfur content):

Natural Gas  LPG (Propane)  CARB Diesel  Coal\*  Petroleum Coke\*  
 Digester Gas\*  Landfill Gas\*  Refinery Gas\*  Other,\* specify: \_\_\_\_\_

Max hourly primary fuel usage: \_\_\_\_\_ 225,000 Fuel units (ft<sup>3</sup>, gal, etc.): \_\_\_\_\_ cu ft

If secondary fuel is proposed, specify: \_\_\_\_\_ Max hourly usage: \_\_\_\_\_

Feedstock type and max process rate (specify units): \_\_\_\_\_ 220,000 lb/hr steam

Unit Lat/Long or UTM Coordinates: \_\_\_\_\_ UTME E 640416 UTMN 3933369

Max annual hours: \_\_\_\_\_ 1,460 Exhaust Stack Height (feet): 130 Inside Diameter (inches): \_\_\_\_\_ 60

**17. EMISSION CONTROLS:** Check all that apply:

Low NOx Burner  Oxygen Trim  Flue or Exhaust Gas Recirculation (FGR or EGR)  
 Oxidation Catalyst  Selective Catalytic Reduction (SCR)  Selective Non-Catalytic Reduction (SNCR)  
 Afterburner  ESP  Baghouse  Other - Please specify: \_\_\_\_\_

**18. MAX EMISSION RATES (CONTROLLED):**

Pollutant	Concentration ppmvd or gr/dscf	Mass pounds/hour
Oxides of Nitrogen (NOx)	9	2.5
Oxides of Sulfur (SOx)	1.7	0.64
Carbon Monoxide (CO)	25	4.23
Total Particulates (TSP or PM30)	0.005	1.71
Coarse Respirable Particulates (PM10)	0.005	1.71
Fine Respirable Particulates (PM2.5)	0.005	1.71
Total Organics (TOG)	1.4	0.14
Volatile Organic Compounds (VOC, ROG or NMOG)	1.4	0.14

**19. DRYERS ONLY** Check one:

Centrifugal  Chip  Fluidized Bed  Rotary  Spray  Other, specify: \_\_\_\_\_

**20. FURNACE ONLY** Check one:

Annealing  Burnoff  Calcining  Crucible  Cupola  Diffusion  Electric  Forge  Pot  
 Holding  Heat Treating  Melting  Reverbatory  Rotary  Sweating  Oxide Growth

**21. OVEN ONLY** Check one:

Bakery  Baking  Curing  Drying  Fluidized Bed  Stripping  Solder Reflow  
 Roasting, specify type: \_\_\_\_\_ Firing Method:  Direct  Indirect

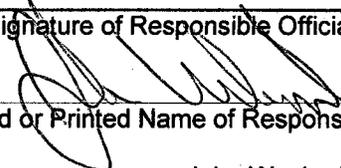
**MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT**  
 14306 Park Avenue, Victorville, CA 92392-2310  
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 Eldon Heaston  
 Executive Director

**APPLICATION FOR INTERNAL COMBUSTION ENGINE (I.C.E.) ONLY**

Page 1 of 2: please type or print

REMIT \$212.00 WITH THIS DOCUMENT (\$121.00 FOR CHANGE OF OWNER)

1. Permit To Be Issued To (company name to receive permit): Solar Partners VIII, LLC		1a. Federal Tax ID No.: 36-4608159	
2. Mailing/Billing Address (for above company name): 1999 Harrison Street, Suite #500, Oakland, CA 94612			
3. Facility or Business License Name (for equipment location): Ivanpah 3			
4. Facility Address - Location of Equipment (if same as for company, enter "Same"): San Bernadino County near the California/Nevada Border at Primm, NV		Facility UTM or Lat/Long: UTME 637569 UTMN 3937859	
5. Contact Name/Title: Steve De Young, Environmental Manager		Email Address: <a href="mailto:steve@deyoung.org">steve@deyoung.org</a>	Phone/Fax Nos.: 925-890-9714
6. Application is hereby made for Authority To Construct (ATC) and Permit To Operate (PTO) the following equipment: Emergency Engine (second of two)			
7. Application is for: <input checked="" type="checkbox"/> New Construction <input type="checkbox"/> Modification* <input type="checkbox"/> Change of Owner*		For modification or change of owner: *Current Permit Number: _____	
8. Type of Organization (check one): <input type="checkbox"/> Individual Owner <input type="checkbox"/> Partnership <input type="checkbox"/> Corporation <input type="checkbox"/> Utility <input type="checkbox"/> Local Agency <input type="checkbox"/> State Agency <input type="checkbox"/> Federal Agency			
9. Distances (feet and direction to closest): <u>3,000 ft</u> Fenceline <u>5.8 miles</u> Residence <u>6700 ft</u> Business <u>40 miles</u> School			
10. General Nature of Business: Power Generation		11. Principal Product: Electricity	
12. Facility Annual Throughput by Quarters (percent): <u>25</u> % <u>25</u> % <u>25</u> % <u>25</u> % Jan-Mar Apr-Jun Jul-Sep Oct-Dec		13. Expected Operating Hours of IC Engine: <u>16</u> <u>7</u> <u>52</u> <u>5840</u> Hrs/Day Days/Wk Wks/Yr Total Hrs/Yr	
14. Do you claim Confidentiality of Data (if yes, state nature of data in attachment)? <input type="checkbox"/> Yes <input type="checkbox"/> No			
15. Signature of Responsible Official: 		Official Title: President and CEO	
Typed or Printed Name of Responsible Official: John Woolard		Phone Number: 510-550-8464	Date Signed: 10/3/07
- For District Use Only -			
Application Number:	Invoice Number:	Permit Number:	Company/Facility Number:

**MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT  
I.C.E. APPLICATION, continued**

Page 2 of 2: please type or print

**16. INFORMATION ON I.C.E.:**

Manufacturer: Caterpillar (or eq.)  
 Model No.: 3516C-HD Serial No.: unk  
 Number of Cylinders: 16 Year of Manufacture: 2007 (or later)  
 Rating: 3750 BHP Speed: 1800 RPM  
 I.C.E. is?  New  Existing Date Installed (MM/YYYY): \_\_\_\_\_  
 Prime  Standby  Emergency  Portable (Yes or No)? No  
 CARB engine certification: Family: 7CPXL78.1T2E Certification EO#: U-R-001-0317  
 Is this engine included in a Demand Response plan?: Yes  No   
 Type of Fuel(s): Natural Gas  Digester Gas  Ethanol  Landfill Gas   
 Propane  CARB Diesel  Methanol  Other: \_\_\_\_\_  
 Max fuel usage per hour: 173.3 Fuel units (ft<sup>3</sup>, gal, etc.): gal  
 Engine Lat/Long or UTM Coordinates: UTME 637543 UTMN 3937816  
 Exhaust Stack Height (feet): 30 Inside Diameter (inches): 18 Y/N: Vertical? Y Capped? N  
 Is this I.C.E. (select all that apply):  
 Direct Injected?  Yes After Cooled?  Yes  
 Turbo Charged?  Yes Inter Cooled?   
 Timing Retarded?  Other - Please specify: \_\_\_\_\_

**17. EMISSION RATES:**

Pollutant	at Max.Load	Units	Origin of Emission Rate data:	
			Manufacturer or	Source Test
Oxides of Nitrogen (NOx)	5.05	g/hp-hr	M	_____
Oxides of Sulfur (SOx)	0.00451	g/hp-hr	_____	_____
Carbon Monoxide (CO)	0.41	g/hp-hr	M	_____
Particulates (PM10)	0.036	g/hp-hr	M	_____
Total Hydrocarbons (VOC)	0.1	g/hp-hr	M	_____

**18. EMISSION CONTROL EQUIPMENT:** Add on emission control equipment?  Yes  No

If yes: Manufacturer: \_\_\_\_\_ Model No.: \_\_\_\_\_  
 Serial No.: \_\_\_\_\_ \*CARB EO#: \_\_\_\_\_  
 Type: SCR:  Particulate Trap\*:  Ammonia Injection:  Water Injection:   
 Non-S CR:  Exhaust Gas Recirc\*:  Oxidation Catalyst\*:   
 Other - Please specify: \_\_\_\_\_

**19. INFORMATION OF ITEM BEING POWERED:** This I.C.E. is used to power:

Electrical Generator  Compressor  Pump   
 Paint Spray Gun  Conveyor or Drive  Fire Pump   
 Other - Please specify: \_\_\_\_\_  
 Manufacturer: \_\_\_\_\_  
 Model No.: \_\_\_\_\_ Serial No.: \_\_\_\_\_  
 Type, Size or Rating: \_\_\_\_\_

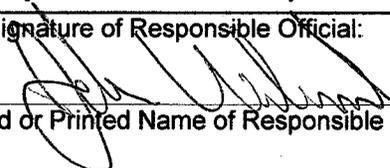
**MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT**  
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**APPLICATION FOR INTERNAL COMBUSTION ENGINE (I.C.E.) ONLY**

Page 1 of 2: please type or print

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2. Mailing/Billing Address (for above company name): 1999 Harrison Street, Suite #500, Oakland, CA 94612			
3. Facility or Business License Name (for equipment location): Ivanpah 3			
4. Facility Address - Location of Equipment (if same as for company, enter "Same"): San Bernadino County near the California/Nevada Border at Primm, NV		Facility UTM or Lat/Long: UTME 637569 UTMN 3937859	
5. Contact Name/Title: Steve De Young, Environmental Manager		Email Address: steve@deyoung.org	Phone/Fax Nos.: 925-890-9714
6. Application is hereby made for Authority To Construct (ATC) and Permit To Operate (PTO) the following equipment: Emergency Engine (1 of 2)			
7. Application is for: <input checked="" type="checkbox"/> New Construction <input type="checkbox"/> Modification* <input type="checkbox"/> Change of Owner*		For modification or change of owner: *Current Permit Number: _____	
8. Type of Organization (check one): <input type="checkbox"/> Individual Owner <input type="checkbox"/> Partnership <input type="checkbox"/> Corporation <input type="checkbox"/> Utility <input type="checkbox"/> Local Agency <input type="checkbox"/> State Agency <input type="checkbox"/> Federal Agency			
9. Distances (feet and direction to closest): 3,000 ft Fenceline    5.8 miles Residence    6700 ft Business    40 miles School			
10. General Nature of Business: Power Generation		11. Principal Product: Electricity	
12. Facility Annual Throughput by Quarters (percent): 25 %    25 %    25 %    25 % Jan-Mar    Apr-Jun    Jul-Sep    Oct-Dec		13. Expected Operating Hours of IC Engine: 16    7    52    5840 Hrs/Day    Days/Wk    Wks/Yr    Total Hrs/Yr	
14. Do you claim Confidentiality of Data (if yes, state nature of data in attachment)? <input type="checkbox"/> Yes <input type="checkbox"/> No			
15. Signature of Responsible Official: 		Official Title: President and CEO	
Typed or Printed Name of Responsible Official: John Woolard		Phone Number: 510-550-8464	Date Signed: 10/3/07
- For District Use Only -			
Application Number:	Invoice Number:	Permit Number:	Company/Facility Number:

**MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT  
I.C.E. APPLICATION, continued**

Page 2 of 2: please type or print

**16. INFORMATION ON I.C.E.:**

Manufacturer: Caterpillar (or eq.)  
 Model No.: 3516C-HD Serial No.: unk  
 Number of Cylinders: 16 Year of Manufacture: 2007 (or later)  
 Rating: 3750 BHP Speed: 1800 RPM  
 I.C.E. is?  New  Existing Date Installed (MM/YYYY): \_\_\_\_\_  
 Prime  Standby  Emergency  Portable (Yes or No)? No  
 CARB engine certification: Family: 7CPXL78.1T2E Certification EO#: U-R-001-0317  
 Is this engine included in a Demand Response plan?: Yes  No   
 Type of Fuel(s): Natural Gas  Digester Gas  Ethanol  Landfill Gas   
                   Propane  CARB Diesel  Methanol  Other: \_\_\_\_\_  
 Max fuel usage per hour: 173.3 Fuel units (ft<sup>3</sup>, gal, etc.): gal  
 Engine Lat/Long or UTM Coordinates: UTME 637543 UTMN 3937816  
 Exhaust Stack Height (feet): 30 Inside Diameter (inches): 18 Y/N: Vertical? Y Capped? N  
 Is this I.C.E. (select all that apply):  
 Direct Injected?  Yes  After Cooled?  Yes   
 Turbo Charged?  Yes  Inter Cooled?   
 Timing Retarded?  Other - Please specify: \_\_\_\_\_

**17. EMISSION RATES:**

Pollutant	at Max. Load	Units	Origin of Emission Rate data:	
			Manufacturer	or Source Test
Oxides of Nitrogen (NOx)	5.05	g/hp-hr	M	_____
Oxides of Sulfur (SOx)	0.00451	g/hp-hr	_____	_____
Carbon Monoxide (CO)	0.41	g/hp-hr	M	_____
Particulates (PM10)	0.036	g/hp-hr	M	_____
Total Hydrocarbons (VOC)	0.1	g/hp-hr	M	_____

**18. EMISSION CONTROL EQUIPMENT:** Add on emission control equipment?  Yes  No

If yes: Manufacturer: \_\_\_\_\_ Model No.: \_\_\_\_\_  
 Serial No.: \_\_\_\_\_ \*CARB EO#: \_\_\_\_\_  
 Type: SCR:  Particulate Trap\*:  Ammonia Injection:  Water Injection:   
 Non-S CR:  Exhaust Gas Recirc\*:  Oxidation Catalyst\*:   
 Other - Please specify: \_\_\_\_\_

**19. INFORMATION OF ITEM BEING POWERED:** This I.C.E. is used to power:

Electrical Generator  Compressor  Pump   
 Paint Spray Gun  Conveyor or Drive  Fire Pump   
 Other - Please specify: \_\_\_\_\_  
 Manufacturer: \_\_\_\_\_  
 Model No.: \_\_\_\_\_ Serial No.: \_\_\_\_\_  
 Type, Size or Rating: \_\_\_\_\_

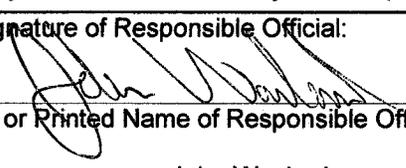
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**APPLICATION FOR INTERNAL COMBUSTION ENGINE (I.C.E.) ONLY**

Page 1 of 2: please type or print

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3. Facility or Business License Name (for equipment location): Ivanpah 3			
4. Facility Address - Location of Equipment (if same as for company, enter "Same"): San Bernadino County near the California/Nevada Border at Primm, NV		Facility UTM or Lat/Long: UTME 637569 UTMN 3937859	
5. Contact Name/Title: Steve De Young, Environmental Manager		Email Address: steve@deyoung.org	Phone/Fax Nos.: 925-890-9714
6. Application is hereby made for Authority To Construct (ATC) and Permit To Operate (PTO) the following equipment: Firepump Engine			
7. Application is for: <input checked="" type="checkbox"/> New Construction <input type="checkbox"/> Modification* <input type="checkbox"/> Change of Owner*		For modification or change of owner: *Current Permit Number: _____	
8. Type of Organization (check one): <input type="checkbox"/> Individual Owner <input type="checkbox"/> Partnership <input type="checkbox"/> Corporation <input type="checkbox"/> Utility <input type="checkbox"/> Local Agency <input type="checkbox"/> State Agency <input type="checkbox"/> Federal Agency			
9. Distances (feet and direction to closest): <u>3,000 ft</u> Fenceline <u>5.8 miles</u> Residence <u>6700 ft</u> Business <u>40 miles</u> School			
10. General Nature of Business: Power Generation		11. Principal Product: Electricity	
12. Facility Annual Throughput by Quarters (percent): <u>25</u> % <u>25</u> % <u>25</u> % <u>25</u> % Jan-Mar    Apr-Jun    Jul-Sep    Oct-Dec		13. Expected Operating Hours of IC Engine: <u>16</u> <u>7</u> <u>52</u> <u>5840</u> Hrs/Day    Days/Wk    Wks/Yr    Total Hrs/Yr	
14. Do you claim Confidentiality of Data (if yes, state nature of data in attachment)? <input type="checkbox"/> Yes <input type="checkbox"/> No			
15. Signature of Responsible Official: 		Official Title: President and CEO	
Typed or Printed Name of Responsible Official: John Woolard		Phone Number: 510-550-8464	Date Signed: 10/3/07
- For District Use Only -			
Application Number:	Invoice Number:	Permit Number:	Company/Facility Number:

**MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT  
I.C.E. APPLICATION, continued**

Page 2 of 2: please type or print

**16. INFORMATION ON I.C.E.:**

Manufacturer: \_\_\_\_\_ Clarke (or eq.) \_\_\_\_\_  
 Model No.: JU6H-UF62 California ATCM Tier 2 Serial No.: \_\_\_\_\_ unk \_\_\_\_\_  
 Number of Cylinders: 6 Year of Manufacture: 2007 (or later)  
 Rating: 240 BHP Speed: 2600 RPM  
 I.C.E. is?  New  Existing Date Installed (MM/YYYY): \_\_\_\_\_  
 Prime  Standby  Emergency  Portable (Yes or No)? No  
 CARB engine certification: Family: \_\_\_\_\_ Certification EO#: \_\_\_\_\_  
 Is this engine included in a Demand Response plan?: Yes  No   
 Type of Fuel(s): Natural Gas  Digester Gas  Ethanol  Landfill Gas   
                   Propane  CARB Diesel  Methanol  Other: \_\_\_\_\_  
 Max fuel usage per hour: 10.3 Fuel units (ft<sup>3</sup>, gal, etc.): gal  
 Engine Lat/Long or UTM Coordinates: UTME 637552 UTMN 3937863  
 Exhaust Stack Height (feet): 20 Inside Diameter (inches): 6 Y/N: Vertical? Y Capped? N  
 Is this I.C.E. (select all that apply):  
 Direct Injected?  After Cooled?   
 Turbo Charged?  Inter Cooled?   
 Timing Retarded?  Other - Please specify: \_\_\_\_\_

**17. EMISSION RATES:**

Pollutant	at Max.Load	Units	Origin of Emission Rate data: Manufacturer or Source Test	
Oxides of Nitrogen (NOx)	4.41	g/hp-hr	M	_____
Oxides of Sulfur (SOx)	0.00499	g/hp-hr	_____	_____
Carbon Monoxide (CO)	0.61	g/hp-hr	M	_____
Particulates (PM10)	0.09	g/hp-hr	M	_____
Total Hydrocarbons (VOC)	0.49	g/hp-hr	M	_____

**18. EMISSION CONTROL EQUIPMENT:** Add on emission control equipment?  Yes  No

If yes: Manufacturer: \_\_\_\_\_ Model No.: \_\_\_\_\_  
 Serial No.: \_\_\_\_\_ \*CARB EO#: \_\_\_\_\_  
 Type: SCR:  Particulate Trap\*:  Ammonia Injection:  Water Injection:   
 Non-S CR:  Exhaust Gas Recirc\*:  Oxidation Catalyst\*:   
 Other - Please specify: \_\_\_\_\_

**19. INFORMATION OF ITEM BEING POWERED:** This I.C.E. is used to power:

Electrical Generator  Compressor  Pump   
 Paint Spray Gun  Conveyor or Drive  Fire Pump   
 Other - Please specify: \_\_\_\_\_  
 Manufacturer: \_\_\_\_\_  
 Model No.: \_\_\_\_\_ Serial No.: \_\_\_\_\_  
 Type, Size or Rating: \_\_\_\_\_

**MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT**

14306 Park Avenue, Victorville, CA 92392-2310  
 (760) 245-1661 Facsimile: (760) 245-2022

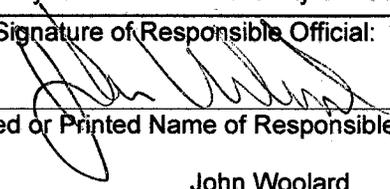
www.mdaqmd.ca.gov

Eldon Heaston  
 Executive Director

**APPLICATION FOR EXTERNAL COMBUSTION ENGINE (BOILER, ETC.) ONLY**

Page 1 of 2: please type or print

REMIT \$212.00 WITH THIS DOCUMENT (\$121.00 FOR CHANGE OF OWNER)

1. Permit To Be Issued To (company name to receive permit): Solar Parnters VIII, LLC		1a. Federal Tax ID No.: 36-4608159	
2. Mailing/Billing Address (for above company name): 1999 Harrison Street, Suite #500, Oakland, CA 94612			
3. Facility or Business License Name (for equipment location): Ivanpah 3			
4. Facility Address - Location of Equipment (if same as for company, enter "Same"): San Bernadino County near the California/Nevada Border at Primm, NV		Facility UTM or Lat/Long: UTME 637569 UTMN 3937859	
5. Contact Name/Title: Steve De Young, Environmental Manager		Email Address: steve@deyoung.org	Phone/Fax Nos.: 925-890-9714
6. Application is hereby made for Authority To Construct (ATC) and Permit To Operate (PTO) the following equipment: Boiler			
7. Application is for: <input checked="" type="checkbox"/> New Construction <input type="checkbox"/> Modification* <input type="checkbox"/> Change of Owner*		For modification or change of owner: *Current Permit Number: _____	
8. Type of Organization (check one): <input type="checkbox"/> Individual Owner <input type="checkbox"/> Partnership <input checked="" type="checkbox"/> Corporation <input type="checkbox"/> Utility <input type="checkbox"/> Local Agency <input type="checkbox"/> State Agency <input type="checkbox"/> Federal Agency			
9. Distances (feet and direction to closest): 3,000 Fenceline    5.8 miles Residence    6,700 ft Business    40 miles School			
10. General Nature of Business: Power Generation		11. Principal Product: Electricity	
12. Facility Annual Throughput by Quarters (percent): 25 %    25 %    25 %    25 % Jan-Mar    Apr-Jun    Jul-Sep    Oct-Dec		13. Facility Operating Hours: 16    7    52    5840 Hrs/Day    Days/Wk    Wks/Yr    Total Hrs/Yr	
14. Do you claim Confidentiality of Data (if yes, state nature of data in attachment)? <input type="checkbox"/> Yes <input type="checkbox"/> No			
15. Signature of Responsible Official: 		Official Title: President and CEO	
Typed or Printed Name of Responsible Official: John Woolard		Phone Number: 510-550-8464	Date Signed: 10/3/07
- For District Use Only -			
Application Number:	Invoice Number:	Permit Number:	Company/Facility Number:

**MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT  
EXTERNAL COMBUSTION APPLICATION, continued**

Page 2 of 2: please type or print

**16. INFORMATION ON EQUIPMENT:**

Boiler  Dryer  Furnace  Heater  Kiln  Oven  Other, specify: \_\_\_\_\_

Manufacturer: \_\_\_\_\_ Babcock-Wilcox (or eq.) \_\_\_\_\_

Model No.: \_\_\_\_\_ Serial No.: \_\_\_\_\_ unk. \_\_\_\_\_

Maximum heat input rating (use Higher Heating Value): \_\_\_\_\_ 462.2 \_\_\_\_\_ MMBtu/hr or kW

Burner Manufacturer: \_\_\_\_\_ Unk. \_\_\_\_\_ Burner Model No.: \_\_\_\_\_ Low-Nox \_\_\_\_\_

Number of burners: \_\_\_\_\_ 1 \_\_\_\_\_ Burner max heat input rating: \_\_\_\_\_ 462.2 \_\_\_\_\_ MMBtu/hr or kW

Percent excess air (or n/a): \_\_\_\_\_ 13.9 \_\_\_\_\_ Operating temps (C or F): \_\_\_\_\_ unk. \_\_\_\_\_ Av. \_\_\_\_\_ unk. \_\_\_\_\_ Max \_\_\_\_\_

Specify Primary Fuel (\*attach fuel analysis for these fuels specifying HHV and sulfur content):

Natural Gas  LPG (Propane)  CARB Diesel  Coal\*  Petroleum Coke\*  
 Digester Gas\*  Landfill Gas\*  Refinery Gas\*  Other,\* specify: \_\_\_\_\_

Max hourly primary fuel usage: \_\_\_\_\_ 450,000 \_\_\_\_\_ Fuel units (ft<sup>3</sup>, gal, etc.): \_\_\_\_\_ cu ft \_\_\_\_\_

If secondary fuel is proposed, specify: \_\_\_\_\_ Max hourly usage: \_\_\_\_\_

Feedstock type and max process rate (specify units): \_\_\_\_\_ 440,000 lb/hr steam \_\_\_\_\_

Unit Lat/Long or UTM Coordinates: \_\_\_\_\_ UTME E 637569 UTMN 3937859 \_\_\_\_\_

Max annual hours: \_\_\_\_\_ 1,460 \_\_\_\_\_ Exhaust Stack Height (feet): 130 Inside Diameter (inches): \_\_\_\_\_ 60 \_\_\_\_\_

**17. EMISSION CONTROLS:** Check all that apply:

Low NOx Burner  Oxygen Trim  Flue or Exhaust Gas Recirculation (FGR or EGR)  
 Oxidation Catalyst  Selective Catalytic Reduction (SCR)  Selective Non-Catalytic Reduction (SNCR)  
 Afterburner  ESP  Baghouse  Other - Please specify: \_\_\_\_\_

**18. MAX EMISSION RATES (CONTROLLED):**

Pollutant	Concentration ppmvd or gr/dscf	Mass pounds/hour
Oxides of Nitrogen (NOx)	9	5
Oxides of Sulfur (SOx)	1.7	1.29
Carbon Monoxide (CO)	25	8.46
Total Particulates (TSP or PM30)	0.005	3.42
Coarse Respirable Particulates (PM10)	0.005	3.42
Fine Respirable Particulates (PM2.5)	0.005	3.42
Total Organics (TOG)	1.4	0.27
Volatile Organic Compounds (VOC, ROG or NMOG)	1.4	0.27

**19. DRYERS ONLY** Check one:

Centrifugal  Chip  Fluidized Bed  Rotary  Spray  Other, specify: \_\_\_\_\_

**20. FURNACE ONLY** Check one:

Annealing  Burnoff  Calcining  Crucible  Cupola  Diffusion  Electric  Forge  Pot  
 Holding  Heat Treating  Melting  Reverbatory  Rotary  Sweating  Oxide Growth

**21. OVEN ONLY** Check one:

Bakery  Baking  Curing  Drying  Fluidized Bed  Stripping  Solder Reflow  
 Roasting, specify type: \_\_\_\_\_ Firing Method:  Direct  Indirect

# JU6H-UF62

FIRE PUMP DRIVER  
EMISSION DATA  
FOR  
CALIFORNIA ATCM TIER 2

6 Cylinders  
Four Cycle  
Lean Burn  
Turbocharged

15 PPM SULFUR #2 DIESEL FUEL <sup>(3b)</sup>								
RPM	BHP <sup>(1)</sup>	FUEL GAL/HR (L/HR)	GRAMS / HP / HR			% O <sub>2</sub>	EXHAUST	
			NMHC+NO <sub>x</sub>	CO	PM <sup>(2)</sup>		°F (°C)	CFM (m <sup>3</sup> /min)
2350	240	11.2 (42)	4.90	0.55	0.13	11.4	853 (456)	1345 (38)
2600	240	12.7 (48)	4.90	0.61	0.09	11.0	848 (453)	1484 (42)

6068T Base Model Engine Manufactured by John Deere Co.

**Notes:**

- 1) Engines are rated at standard conditions of 29.61in. (7521 mm) Hg barometer and 77°F (25° C) inlet air temperature. (SAE J1349)
- 2) PM is a measure of total particulate matter, including PM<sub>10</sub>.
- 3) These emission values:
  - a) are dependent on CUSTOMER PURCHASED special option C131329 on the engine
  - b) are dependent on the use of fuel with the following properties;
    - i) maximum 15 parts per million (PPM) sulfur content
    - ii) maximum 10% by volume aromatic hydrocarbon content
    - iii) minimum lubricity level of a maximum wear scar diameter of 520 microns based on ASTM D6079 or D6079-02
  - c) have been determined using a calculation method found valid by CARB
  - d) see disclaimer on reverse side

## CLARKE

FIRE PROTECTION PRODUCTS  
3133 EAST KEMPER ROAD  
CINCINNATI, OH 45241

## Disclaimer

1. Stationary diesel-fueled compression ignition engines installed in California after January 1, 2005 are subject to California's Airborne Toxic Control Measure for Stationary Compression Ignition Engines (the "ATCM"), Cal. Code Regs. Title 17, Section 93115. The California Air Resources Board ("CARB") has reviewed the emissions estimation methodology provided by Clarke Fire Protection Products, Inc. ("Clarke") and has concluded that Clarke has used a valid methodology for estimating the emissions from engines supplied by Clarke and that the engines presumptively comply with the ATCM's emissions standards. Clarke's methodology used existing emissions test data associated with similar engines to estimate the emissions produced by the emergency fire pump engines supplied by Clarke.
2. The reverse side of this document shows the estimated emissions from this model engine supplied by Clarke using Clarke's methodology.
3. CARB's determination is not binding on the local air districts, which have primary jurisdiction for implementing and enforcing the ATCM. Actual test data in the field or other information established by the local air districts or CARB that show actual emissions from an engine supplied by Clarke in excess of the ATCM limitations could indicate a violation of the ATCM and subject the seller, owner and operator of the engine to penalties under California law. Although Clarke believes that the engines supplied by Clarke comply with the ATCM based on the available data and methodology accepted by CARB, for the foregoing reasons, Clarke cannot, and does not, guarantee that its engines will comply with the ATCM emission regulations.
4. **CLARKE MAKES NO WARRANTIES OR GUARANTIES, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE, THAT THE ENGINES SUPPLIED BY CLARKE WILL COMPLY WITH THE ATCM. CLARKE ALSO EXPRESSLY DISCLAIMS THAT THE ENGINES SUPPLIED BY CLARKE WILL, IN FACT, COMPLY WITH THE ATCM. IN NO EVENT SHALL CLARKE BE LIABLE FOR SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF OR IN CONNECTION WITH THESE TERMS AND CONDITIONS OR THE ENGINES SUPPLIED BY CLARKE OR FOR INDEMNIFICATION OF BUYER ON ACCOUNT OF ANY CLAIM ASSERTED AGAINST BUYER, OR FOR ANY OTHER DAMAGE OF ANY KIND, WHETHER DIRECT OR INDIRECT, IF THE ENGINES SUPPLIED BY CLARKE DO NOT COMPLY WITH THE ATCM.**

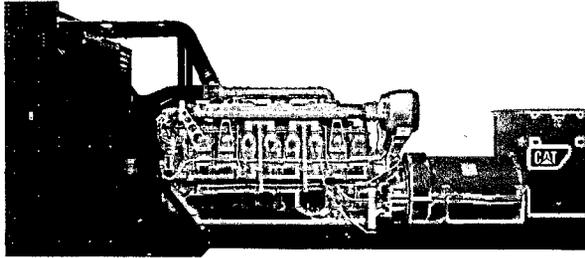


Image shown may not reflect actual package.

## STANDBY

**2500 kW 3125 kVA  
60 Hz 1800 rpm 480 Volts**

Caterpillar is leading the power generation marketplace with Power Solutions engineered to deliver unmatched flexibility, expandability, reliability, and cost-effectiveness.

## FEATURES

### FUEL/EMISSIONS STRATEGY

- EPA Tier 2

### DESIGN CRITERIA

- The generator set accepts 100% rated load in one step per NFPA 110 and meets ISO 8528-5 transient response.

### UL 2200

- UL 2200 listed packages available. Certain restrictions may apply. Consult with your Caterpillar Dealer.

### FULL RANGE OF ATTACHMENTS

- Wide range of bolt-on system expansion attachments, factory designed and tested

### SINGLE-SOURCE SUPPLIER

- Fully prototype tested with certified torsional vibration analysis available

### WORLDWIDE PRODUCT SUPPORT

- Caterpillar® dealers provide extensive post sale support including maintenance and repair agreements
- Caterpillar dealers fill 99.7% of parts orders within 24 hours
- Caterpillar dealers have over 1,600 dealer branch stores operating in 200 countries
- The Cat® S•O•S<sup>SM</sup> program cost effectively detects internal engine component condition, even the presence of unwanted fluids and combustion by-products

### CAT 3516C-HD TA DIESEL ENGINE

- Reliable, rugged, durable design
- Field-proven in thousands of applications worldwide
- Four-stroke-cycle diesel engine combines consistent performance and excellent fuel economy with minimum weight

### CAT SR5 GENERATOR

- Matched to the performance and output characteristics of Caterpillar engines
- 2/3 winding pitch for minimum total harmonic distortion and maximum efficiency
- UL 1446 Recognized
- Class H insulation system

### CAT EMCP 3 SERIES CONTROL PANELS

- Controls designed to meet individual customer needs.
- EMCP 3 provides the option for full-featured power metering and protective relaying
- Segregated low voltage, AC/DC accessory box provides single point access to accessory connections
- Options to meet UL/CSA/NFPA
- Power Center provides convenient location for control panel, optional power terminal strips and optional circuit breakers

# STANDBY 2500 ekW 3125 kVA

60 Hz 1800 rpm 480 Volts



## FACTORY INSTALLED STANDARD & OPTIONAL EQUIPMENT

System	Standard	Optional
Air Inlet	<ul style="list-style-type: none"> <li>• Single element canister type air cleaner</li> <li>• Service indicator</li> </ul>	<ul style="list-style-type: none"> <li>• Dual element &amp; heavy duty air cleaners (with pre-cleaners)</li> <li>• Air inlet adapters &amp; shutoff</li> </ul>
Cooling	<ul style="list-style-type: none"> <li>• Radiator with guard (43°C)</li> <li>• Coolant drain line with valve</li> <li>• Fan and belt guards</li> <li>• Caterpillar Extended Life Coolant</li> <li>• Low coolant level &amp; high temperature alarm or shutdown</li> </ul>	<ul style="list-style-type: none"> <li>• Radiator duct flange</li> <li>• Jacket water heater</li> </ul>
Exhaust	<ul style="list-style-type: none"> <li>• Dry exhaust manifold</li> <li>• Flanged faced outlets</li> </ul>	<ul style="list-style-type: none"> <li>• Mufflers and Silencers</li> <li>• Stainless steel exhaust flex fittings</li> <li>• Elbows, flanges, expanders &amp; Y adapters</li> </ul>
Fuel	<ul style="list-style-type: none"> <li>• Secondary fuel filters</li> <li>• Fuel priming pump</li> <li>• Flexible fuel lines</li> <li>• Fuel cooler*</li> <li>*Not included with packages without radiators</li> </ul>	<ul style="list-style-type: none"> <li>• Water separator</li> <li>• Duplex fuel filter</li> </ul>
Generator SR5	<ul style="list-style-type: none"> <li>• Permanent Magnet</li> <li>• Class H insulation</li> <li>• Class H temperature (125°C prime/150°C standby)</li> <li>• Random Wound</li> </ul>	<ul style="list-style-type: none"> <li>• Oversize &amp; premium generators</li> <li>• Anti-condensation space heater</li> <li>• Bearing temperature detector</li> <li>• Stator temperature detector</li> </ul>
Generator SR4B	<ul style="list-style-type: none"> <li>• Permanent magnet excited</li> <li>• 2/3 Pitch</li> <li>• Class H insulation</li> <li>• Class F temperature (105°C prime/130°C standby)</li> <li>• Winding temperature detectors(select models)</li> </ul>	<ul style="list-style-type: none"> <li>• Oversize &amp; premium generators</li> <li>• Anti-condensation space heaters</li> <li>• Bearing temperature detector</li> <li>• Stator temperature detector</li> </ul>
Power Termination	<ul style="list-style-type: none"> <li>• Bus bar (NEMA and IEC meachanicallug holes) -right side standard</li> <li>• Top and bottom cable entry</li> </ul>	<ul style="list-style-type: none"> <li>• Circuit breakers, UL listed, 3 pole with shunt trip, 80% or 100% rated, choice of trip units, manual or electrically operated (low voltage only)</li> <li>• Circuit breakers, IEC compliant, 3 or 4 pole with shunt trip (low voltage only), choice of trip units, manual or electrically operated</li> <li>• Shroud cover for bottom cable entry</li> <li>• Power terminations can be located on the left and/or rear as an option. Also, multiple circuit breakers can be ordered (up to 3)</li> </ul>
Governor	<ul style="list-style-type: none"> <li>• ADEM™ 3</li> </ul>	<ul style="list-style-type: none"> <li>• Load share module</li> </ul>
Control Panels	<ul style="list-style-type: none"> <li>• User Interface panel (UIP) - rear mount (standard)</li> <li>• EMCP3.1 Genset Controller</li> <li>• Speed adjust (on panel)</li> <li>• AC&amp;DC customer wiring area (right side)</li> <li>• CAT digital voltage regulator (CDVR) with KVAR/PF control, 3-phase sensing</li> <li>• Emergency Stop Pushbutton</li> </ul>	<ul style="list-style-type: none"> <li>• EMCP 3.3</li> <li>• Option for right or left mount UIP</li> <li>• Local &amp; remote annunciator modules</li> <li>• Load share module</li> <li>• Discrete I/O module</li> <li>• Generator temperature monitoring &amp; protection</li> <li>• Voltage Adjust (on panel)</li> </ul>
Lube	<ul style="list-style-type: none"> <li>• Lubricating oil and filter</li> <li>• Oil drain line with valves</li> <li>• Fumes disposal</li> <li>• Gear type lube oil pump</li> </ul>	<ul style="list-style-type: none"> <li>• Oil level regulator</li> <li>• Deep sump oil pan</li> <li>• Electric &amp; air prelube pumps</li> <li>• Manual prelube with sump pump</li> <li>• Duplex oil filter</li> </ul>
Mounting	<ul style="list-style-type: none"> <li>• Structural steel tube</li> <li>• Anti-vibration mounts (shipped loose)</li> </ul>	<ul style="list-style-type: none"> <li>• Isolator removal</li> </ul>
Starting/Charging	<ul style="list-style-type: none"> <li>• 24 volt starting motor(s)</li> <li>• Batteries with rack and cables</li> <li>• Battery disconnect switch</li> </ul>	<ul style="list-style-type: none"> <li>• Battery chargers (10&amp;20AMP)</li> <li>• 45 amp charging alternator</li> <li>• Oversize batteries</li> <li>• Ether starting aid</li> <li>• Heavy duty starting motors</li> <li>• Barring device (manual)</li> <li>• Air starting motor with control &amp; silencer</li> </ul>
General	<ul style="list-style-type: none"> <li>• Right-hand service</li> <li>• Paint - Caterpillar Yellow except rails and radiators are gloss black</li> <li>• SAE standard rotation</li> <li>• Flywheel and flywheel housing - SAE No. 90</li> </ul>	<ul style="list-style-type: none"> <li>• CSA certification</li> <li>• EU Certificate of Conformance</li> </ul>
Note	Standard and optional equipment may vary for UL	

# STANDBY 2500 ekW 3125 kVA

60 Hz 1800 rpm 480 Volts



## SPECIFICATIONS

### CAT GENERATOR

Frame..... 1842  
Excitation..... Permanent Magnet  
Pitch..... 0.6667  
Number of poles..... 4  
Number of bearings..... 2  
Number of leads..... 6  
Insulation..... UL 1446 Recognized Class H with tropicalization and antiabrasion  
IP Rating..... Drip Proof IP22  
Alignment..... Closed Coupled  
Overspeed capability..... 125%  
Wave form..... 2%  
Paralleling kit/Droop transformer..... Standard  
Voltage regulator.3 Phase sensing with selectable volts/Hz  
Voltage regulation .....Less than +/- 1/2% (steady state)  
Less than +/- 1/2% (w/3% speed change)  
Telephone influence factor..... Less than 50  
Harmonic distortion..... Less than 5%

### CAT DIESEL ENGINE

3516C-HD ATAAC, V-16,4 stroke, water-cooled  
Bore..... 170.00 mm (6.69 in)  
Stroke..... 215.00 mm (8.46 in)  
Displacement.....78.08 L (4764.73 in<sup>3</sup>)  
Compression Ratio..... 14.7:1  
Aspiration..... TA  
Fuel System..... Electronic unit injection  
Governor Type..... ADEM3

### CAT EMCP3 CONTROL PANELS

EMCP 3.1 (standard)  
EMCP 3.2 & 3.3 (Optional)  
24 Volt DC control  
Generator instruments designed to meet UL/CSA/CE  
Integral generator terminal box  
Single location for customer connection  
MODBUS isolated data link (RS0485 half-duplex)  
supports serial communication at data rate up to 33.6 kbaud  
Auto start/stop control  
True RMS metering, 3-phase  
• Digital indication for:  
-RPM  
-Operating hours  
-Oil pressure  
-Coolant temperature  
- System DC volts  
--L-L volts, L-N volts, phase amps, Hz  
-Ekw, kVA, kVAR, kW-hr, %kW, PF  
• Shutdowns with indicating lights for:  
-Low oil pressure  
-High coolant temperature  
- Low coolant level  
- Overspeed  
-Overspeed  
-Emergency stop  
- Failure to start (over crank)  
• Programmable protective relay functions:  
- Under and over voltage  
- Under and over frequency  
- Reverse power  
- Overcurrent (phase & total)  
-• Programmable kW level relay

# STANDBY 2500 ekW 3125 kVA

60 Hz 1800 rpm 480 Volts



## TECHNICAL DATA

Open Generator Set - - 1800 rpm/60 Hz/480 Volts	DM8266	
<b>EPA Tier 2</b>		
<b>Generator Set Package Performance</b> Genset Power rating @ 0.8 pf Genset Power rating with fan	3125 kVA 2500 ekW	
<b>Coolant to aftercooler</b> Coolant to aftercooler temp max	50 ° C	122 ° F
<b>Fuel Consumption</b> 100% load with fan 75% load with fan 50% load with fan	655.9 L/hr 509.6 L/hr 372.3 L/hr	173.3 Gal/hr 134.6 Gal/hr 98.4 Gal/hr
<b>Cooling System<sup>1</sup></b> Ambient air temperature Air flow restriction (system) Air flow (max @ rated speed for radiator arrangement) Engine Coolant capacity with radiator/exp. tank Engine coolant capacity Radiator coolant capacity	43 ° C 0.12 kPa 2800 m <sup>3</sup> /min 504.0 L 233.0 L 271.0 L	109 ° F 0.48 in. water 98881 cfm 133.1 gal 61.6 gal 71.6 gal
<b>Inlet Air</b> Combustion air inlet flow rate	198.0 m <sup>3</sup> /min	6992.3 cfm
<b>Exhaust System</b> Exhaust stack gas temperature Exhaust gas flow rate Exhaust flange size (internal diameter) Exhaust system backpressure (maximum allowable)	494.4 ° C 539.4 m <sup>3</sup> /min 203.2 mm 6.7 kPa	921.9 ° F 19048.7 cfm 8.0 in 26.9 in. water
<b>Heat Rejection</b> Heat rejection to coolant (total) Heat rejection to exhaust (total) Heat rejection to aftercooler Heat rejection to atmosphere from engine Heat rejection to atmosphere from generator	830 kW 2478 kW 763 kW 161 kW 106.9 kW	47202 Btu/min 140924 Btu/min 43392 Btu/min 9156 Btu/min 6079.4 Btu/min
<b>Alternator<sup>2</sup></b> Motor starting capability @ 30% voltage dip Frame Temperature Rise	6559 skVA 1842 150 ° C	270 ° F
<b>Lube System</b> Sump refill with filter	401.3 L	106.0 gal
<b>Emissions (Nominal)<sup>3</sup></b> NOx g/hp-hr CO g/hp-hr HC g/hp-hr PM g/hp-hr	5.05 g/hp-hr .41 g/hp-hr .1 g/hp-hr .036 g/hp-hr	

<sup>1</sup> Ambient capability at 300 m (984ft) above sea level. For ambient capability at other altitudes, consult your Caterpillar dealer.

<sup>2</sup> UL 2200 Listed packages may have oversized generators with a different temperature rise and motor starting characteristics. Generator temperature rise is based on a 40 degree C ambient per NEMA MG1-32.

<sup>3</sup> Emissions data measurement procedures are consistent with those described in EPA CFR 40 Part 89, Subpart D & E and ISO8178-1 for measuring HC, CO, PM, NOx. Data shown is based on steady state operating conditions of 77°F, 28.42 in HG and number 2 diesel fuel with 35° API and LHV of 18,390 btu/lb. The nominal emissions data shown is subject to instrumentation, measurement, facility and engine to engine variations. Emissions data is based on 100% load and thus cannot be used to compare to EPA regulations which use values based on a weighted cycle.

# STANDBY 2500 ekW 3125 kVA

60 Hz 1800 rpm 480 Volts



## RATING DEFINITIONS AND CONDITIONS

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**Meets or Exceeds International Specifications:** AS1359, CSA, IEC60034, ISO3046, ISO8528, NEMA MG 1-33, UL508A, 98/37/EC

**Standby** - Output available with varying load for the duration of the interruption of the normal source power. Average power output is 70% of the standby power rating. Typical operation is 200 hours per year, with maximum expected usage of 500 hours per year.

Standby power in accordance with ISO8528. Fuel stop power in accordance with ISO3046. Standby ambients shown indicate ambient temperature at 100% load which results in a coolant top tank temperature just below the shutdown temperature.

**Ratings** are based on SAE J1995 standard conditions. These ratings also apply at ISO3046 standard conditions.

**Fuel Rates** are based on fuel oil of 35° API [16° C (60° F)] gravity having an LHV of 42 780 kJ/kg (18,390 Btu/lb) when used at 29° C (85° F) and weighing 838.9 g/liter (7.001 lbs/U.S. gal.). Additional ratings may be available for specific customer requirements. Consult your Caterpillar representative for details.

# STANDBY 2500 ekW 3125 kVA

60 Hz 1800 rpm 480 Volts



## DIMENSIONS

---

Package Dimensions		
Length	7073.1 mm	278.47 in
Width	2569.2 mm	101.15 in
Height	3003.5 mm	118.25 in
Weight	18 441 kg	40,655 lb

Note: Do not use for installation design.  
See general dimension drawings for  
detail (Drawing #2924201).

[www.CAT-ElectricPower.com](http://www.CAT-ElectricPower.com)

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Performance No.: DM8266

Feature Code:: 516DE5L

Source:: U.S. Sourced

2 April 2007

9485397

Materials and specifications are subject to change without notice.  
The International System of Units (SI) is used in this publication.

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POWER EDGE trade dress, as well as corporate and product identity used  
herein, are trademarks of Caterpillar and may not be used without  
permission.

# 5.2 Biological Resources

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## 1. Air Emission Impacts [Appendix B(g)(13)(E)(i)]

*all impacts (direct, indirect, and cumulative) to biological resources from project site preparation, construction activities, plant operation, maintenance, and closure. Discussion shall also address sensitive species habitat impacts from cooling tower drift and air emissions;*

### **Information required for the AFC to conform to the regulations:**

*A discussion of air emissions and potential sensitive species habitat impacts in the local area surrounding the power plant should be included in the AFC.*

**Response** – Natural gas fired boilers will be used to bring the system up to operating temperature in the morning and periodically to keep system temperatures up when a cloud briefly blocks sunlight. The boilers are not big enough to allow operation for sustained periods of reduced sunlight (i.e., on cloudy days or at night). Heat input from natural gas will not exceed five percent of the heat input from the sun, on an annual basis. Boiler use will not exceed 4 hours on any given day, and average boiler use will be less than one hour per operating day. Solar heat will be used to keep each boiler in hot standby mode, capable of responding to demand on short notice. No fuel will be fired while a boiler is on hot standby. Given the very limited use of natural gas by the Ivanpah SEGS facility, deposition of nitrogen and other air emissions is expected to have a de minimus effect on background nitrogen levels in the project vicinity and will thus have no impact on soil nitrification in the local area surrounding the power plant.

# 5.3 Cultural Resources

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## 1. Literature Search Results [Appendix B(g)(2)(B)]

*The results of a literature search to identify cultural resources within an area not less than a 1-mile radius around the project site and not less than one-quarter (0.25) mile on each side of the linear facilities. Identify any cultural resources listed pursuant to ordinance by a city or county, or recognized by any local historical or archaeological society or museum. Literature searches to identify the above cultural resources must be completed by, or under the direction of, individuals who meet the Secretary of the Interior’s Professional Standards for the technical area addressed.*

*Copies of California Department of Parks and Recreation (DPR) 523 forms (Title 14 CCR §4853) shall be provided for all cultural resources (ethnographic, architectural, historical, and archaeological) identified in the literature search as being 45 years or older or of exceptional importance as defined in the National Register Bulletin Guidelines, (36CFR60.4(g)). A copy of the USGS 7.5' quadrangle map of the literature search area delineating the areas of all past surveys and noting the California Historical Resources Information System (CHRIS) identifying numbers shall be provided. Copies also shall be provided of all technical reports whose survey coverage is wholly or partly within .25 mile of the area surveyed for the project under Section (g)(2)(C), or which report on any archaeological excavations or architectural surveys within the literature search area*

**Information required for the AFC to conform to the regulations:**

*a. Please contact San Bernardino County and identify cultural resources listed per local ordinance that are located within a one-mile radius of the proposed plant site. Any cultural resources recognized by San Bernardino County should be plotted on confidential Figures A-1, A-2, and A-3.*

**Response** – The County does not maintain separate listings of cultural resources and, therefore, cannot provide a list of resources within a 1-mile radius.

<p><b>COUNTY OF SAN BERNARDINO</b>          GEORGE KENLINE          909-387-4147</p>	<p>RECORDS REGARDING CULTURAL RESOURCES WITHIN THE COUNTY OF SAN BERNARDINO ARE MAINTAINED AT THE SAN BERNARDINO COUNTY MUSEUM AND THE COUNTY DOES NOT MAINTAIN SEPARATE LISTINGS OF CULTURAL RESOURCES.</p>
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*b. Submitted map is a poorly reproduced B-&W copy of what the CHRIS provided in color. Color-delineated survey coverages cannot be distinguished one from another, and handwritten annotations are illegible. Submit single-sided, photographic-quality, color copy of the CHRIS survey-coverage maps, with legible report numbers. Applicant should add the boundaries of the project area, represented in some distinctive delineation, to these maps.*

**Response** – The color pages are being provided as Attachment CR-1B, under a request for confidentiality.

*c. Staff cannot determine whether all the required reports have been submitted until a usable map, as described above, has been received.*

**Response** – The Applicant has provided all materials received from CHRIS in Confidential Appendix 5.3C of the AFC.

# 5.6 Land Use

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## 1. LORS Table [Appendix B(i)(1)(A)]

*Tables which identify laws, regulations, ordinances, standards, adopted local, regional, state, and federal land use plans, leases, and permits applicable to the proposed project, and a discussion of the applicability of, and conformance with each. The table or matrix shall explicitly reference pages in the application wherein conformance with each law or standard during both construction and operation of the facility is discussed; and*

### **Information required for the AFC to conform to the regulations:**

*Please discuss the project's conformance with San Bernardino County's Development Code requirements for the Resource Conservation Zoning District related to land use.*

**Response** – Information regarding the project's conformance with San Bernardino County's Development Code requirements for the Resource Conservation Zoning District is provided in Table LU-1. In addition, as referenced in the table, Section 5.13 Visual Resources includes additional discussion of conformance with applicable development codes.

TABLE LU-1  
Conformity with San Bernardino County's Development Code requirements for the Resource Conservation Zoning District

<b>Development Code Chapter</b>	<b>Policy</b>	<b>Conformity</b>
<b>82.03 Agricultural and Resource Management Land Use Zoning Districts</b>	82.03.020 Minimum Area for Designation. Table 82-3 lists that the minimum area for designation for the RC District is 200 acres.	Yes. The project site is about 3,400 acres.
	82.03.040 Allowed Uses and Permit Requirements. Table 82-4 lists the allowable types of uses, including electrical power generation.	Yes. The project will generate electricity.
	82.03.050 Subdivision Standards. This section includes minimum parcel sizes. Table 82-4C lists the minimum lot requirements for the RC District as follows: Minimum lot area = 40 acres; Minimum Frontage width = 150 feet; Minimum width = 300 feet; Minimum depth = 300 feet; and Maximum width to depth ratio = 1:4.	N/A. These standards apply to residential subdivisions.
	82.03.060 Site Planning and Building Standards. Table 82-5C lists the requirements for buildings in the RC District. Most of the requirements apply to residential development, except for parking and signs, which are discussed below.	N/A. These standards apply to residential subdivisions.

TABLE LU-1

Conformity with San Bernardino County's Development Code requirements for the Resource Conservation Zoning District

<b>Development Code Chapter</b>	<b>Policy</b>	<b>Conformity</b>
<b>83.02 General Development and Use Standards</b>	83.02.040: Height Measurement and Height Limit Exceptions and 83.02.060 Screening and Buffering.	Refer to Section 5.13 Visual Resources, Table 5.13-5.
<b>83.06 Fences, Hedges, and Walls</b>	83.06.030: General Height Limitations; 83.06.040: Measurement of Fence or Wall Height.	Refer to Section 5.13, Table 5.13-5.
<b>83.07 Glare and Outdoor Lighting</b>	83.07.040: Glare and Outdoor Lighting – Mountain and Desert Regions.	Refer to Section 5.13, Table 5.13-5.
<b>83.10 Landscaping Standards</b>	83.10.020: Applicability, 83.10.050: Landscape Plans; 83.10.060 Landscape Area Requirements; 83.10.070 Landscape Standards; 83.10.080 Regional Landscaping Requirements	Refer to Section 5.13, Table 5.13-5.
<b>83.11 Parking</b>	83.11.040 Number of Parking Spaces Required. Requires industrial uses of all types to provide 1 parking space for each 1,000 sf of the first 40,000 sf of Gross Floor Area (GFA) and 1 parking space for each 4,000 sf of GFA for the portion over 40,000 sf; and 1 parking space for each facility vehicle.	Yes. As shown in AFC Figures 2.2-1b, 2.2-2b and 2.2-3b, parking will be provided at each power block. In addition, parking will be provided at the Administration building. Sufficient parking will be provided to accommodate the 90 employees that will be onsite during operations (30 will be onsite during the day and 60 will be onsite during the nighttime). This number of parking spaces will exceed the requirement of this policy, which is based on building square footage.
<b>83.13 Sign Regulations</b>	83.13.020: Applicability; 83.13.030: Sign Permits and Exemptions.	Refer to Section 5.13, Table 5.13-5.

# 5.10 Socioeconomics

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## 1. Payroll Estimates [Appendix B(g)(7)(B)(vii)]

*An estimate of the total construction payroll and separate estimates of the total operation payroll for permanent and short-term (contract) operations employees;*

***Information required for the AFC to conform to the regulations:***

*Please provide separate estimates of the total operation payroll for permanent and short-term (contract) operations employees.*

**Response** – An estimate of the total operation payroll for permanent and short-term (contract) operations employees is provided in the table below:

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	Ivanpah 1	Ivanpah 2	Ivanpah 3
Total operational payroll for permanent operations employees	\$1,620,000	\$900,000	\$1,620,000
Total operational payroll for short-term (contract) operations employees	\$480,000	\$300,000	\$480,000

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# 5.11 Soils

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## 1. General Information [Appendix B(g)(1)]

*...provide a discussion of the existing site conditions, the expected direct, indirect and cumulative impacts due to the construction, operation and maintenance of the project, the measures proposed to mitigate adverse environmental impacts of the project, the effectiveness of the proposed measures, and any monitoring plans proposed to verify the effectiveness of the mitigation.*

### **Information required for the AFC to conform to the regulations:**

*A discussion of the direct and indirect impacts due to the construction, operation and maintenance of the project is required. Also, a discussion of any monitoring plans proposed to verify the effectiveness of the mitigation is required. If no monitoring plan is proposed, please explain the rationale.*

**Response** – There are direct and indirect impacts to soils due to construction and operation and maintenance activities. Direct impacts include those that occur as a result of direct disturbances to the soil. For construction activities, these will include soil compaction caused by vehicular traffic and soil removal and mixing from clearing and grading of the site. The direct impact resulting from operation and maintenance activities will include soil compaction from vehicular traffic during routine maintenance activities. Indirect impacts include those offsite impacts that result from onsite activities. The major indirect impact as a result of construction will be dust that is produced from clearing and grading and vehicular traffic. Indirect impacts from operation and maintenance activities will include dust produced from vehicular traffic, potential erosion from runoff water that is used to wash heliostats, and disturbances from wind erosion in the immediate lee of the heliostats. Heliostats increase surface roughness, which can disrupt the direction and flow pattern of the wind, creating a downward vector, which may detach and transport soil particles. Water erosion is likely to be negligible due to high infiltration rates and low runoff potential for the site soils. Soil erosion during construction and operation will be mitigated in accordance with the stormwater pollution prevention plans (SWPPPs). The Construction SWPPP is provided as AFC Appendix 5.15A and the Industrial SWPPP is provided as AFC Appendix 5.15B.

## 2. Soil Depth and Erosion Hazard [Appendix B(g)(15)(A)(i)]

*The depth, texture, permeability, drainage, erosion hazard rating, and land capability class of the soil;*

### **Information required for the AFC to conform to the regulations:**

*The soil depth and erosion hazard rating are required. Please provide these.*

**Response** – The majority of the soils are moderately deep (60 to 63 inches). Erosion hazard ratings were not available from the published soil survey or official series descriptions. Wind Erodibility Group (WEG) ratings were used to estimate the erodibility of the soil. The WEG ratings are based on a scale of 1 to 8, with 1 representing the most erodible group (NRCS, 2007a). Wind erodibility groups ranged from 1 to 3, indicating the majority of the site is assumed to have severe erosion potential due to wind. Additional

information on soil depth and erodibility has been added to AFC Table 5.11-2 and is shown as underlined text.

TABLE 5.11-2  
Soil Mapping Unit Descriptions and Characteristics

Map Unit	Description
<b>3000</b>	<b>Copperworld Association – slope class (30 to 60%)</b> <ul style="list-style-type: none"> <li>– Somewhat excessively drained</li> <li>– <u>Shallow soils (6 inches)</u></li> <li>– Formed on mountains in residuum and colluvium from metamorphic rock</li> <li>– Gravelly sandy loam surface and subsurface</li> <li>– <u>Wind Erodibility Group: 2</u></li> <li>– Permeability is moderately low to high</li> <li>– Runoff is very high</li> <li>– Capability Class 6e</li> <li>– Taxonomic class: loamy, mixed, superactive, thermic Lithic Haplargids</li> <li>– Elevation range from 3,210 to 5,250 feet</li> </ul>
<b>3520</b>	<b>Arizo loamy sand – slope class (2 to 8%)</b> <ul style="list-style-type: none"> <li>– Excessively drained</li> <li>– Alluvial fans, inset fans, fan aprons, fan skirts, stream terraces</li> <li>– Formed in alluvium derived from metamorphic and sedimentary rock</li> <li>– <u>Moderately deep (63 inches)</u></li> <li>– Loamy sand surface over gravelly sand subsurface</li> <li>– <u>Wind Erodibility Group: 1</u></li> <li>– Permeability is rapid to very rapid</li> <li>– Runoff is very low to medium</li> <li>– Soils are moderately alkaline</li> <li>– Capability Class 6e</li> <li>– Taxonomic class: sandy-skeletal, mixed, thermic Typic Torriorthents</li> <li>– Elevation range from 2,620 to 3,940 feet</li> </ul>
<b>3660</b>	<b>Colosseum Association – slope class (2 to 4%)</b> <ul style="list-style-type: none"> <li>– Somewhat excessively drained</li> <li>– Alluvial fan aprons</li> <li>– Formed in alluvium derived from limestone and dolomite</li> <li>– Fine sandy loam surface over gravelly loamy sand substratum</li> <li>– <u>Wind Erodibility Group: 2</u></li> <li>– <u>Moderately deep (59 inches)</u></li> <li>– Permeability is rapid to very rapid</li> <li>– Capability Class 7s</li> <li>– Taxonomic class: sandy-skeletal, carbonatic, thermic Typic Haplocalcids</li> <li>– Elevation range from 2,620 to 3,440 feet</li> </ul>
<b>4122</b>	<b>Popups sandy loam– slope class (4 to 30%)</b> <ul style="list-style-type: none"> <li>– Well drained</li> <li>– Moderately deep to a hardpan (<u>60 inches</u>), formed on fan remnants from mixed alluvium</li> <li>– Sandy loam surface and subsurface over stratified gravelly sandy clay loam and gravelly coarse sandy loam</li> <li>– <u>Wind Erodibility Group: 3</u></li> <li>– Permeability is moderately rapid above the hardpan</li> <li>– Runoff is negligible to medium</li> <li>– Capability Class 6e</li> <li>– Taxonomic class: coarse-loamy, mixed, superactive, thermic Argidic Argiurids</li> <li>– Elevation range from 3,380 to 3,870 feet</li> </ul>

Note: Soil characteristics are based on soil mapping provided in the published online soil survey (NRCS, 2007a) and a review of corresponding OSDs. Soil map units described above are limited to those mapped in the vicinity of the Ivanpah SEGS project and associated linear features.

# 5.12 Traffic and Transportation

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## 1. Road Classification and Design Capacity [Appendix B(g)(5)(C)(i)]

Road classification and design capacity;

**Information required for the AFC to conform to the regulations:**

Please provide road design capacity for Interstate 15 (I-15).

**Response** – Interstate 15 (I-15) is a divided freeway with two lanes in each direction. The estimated capacity is 2,000 vehicles/hour/lane. With a 10% k-factor, that would result in an approximate capacity of 40,000 vehicles/day per direction, or a total of 80,000 vehicles/day.

## 2. Traffic Counts [Appendix B(g)(5)(C)(ii)]

Current daily average and peak traffic counts;

**Information required for the AFC to conform to the regulations:**

Please provide current daily average traffic counts (I-15).

**Response** – Numbers have been developed from the following information found on Caltrans’ and the County of San Bernardino’s websites:

- 2003 Ramp volumes (2003 data was the most recent available when the study began; 2006 ADT were recently added on June 12, 2007)  
<http://traffic-counts.dot.ca.gov/districtbreakdown.htm>
- It was observed that at the on- and off-ramps, approximately 75 percent of traffic was going southbound, and 25 percent northbound. Therefore, it was estimated that 75 percent of vehicles had originated from Nevada and 25 percent had originated from California.
- Yates Well Road On/Off Ramps Volumes, August 2006  
<http://www.sbcounty.gov/transADT/AvgDailyTraffic.aspx>

Road Number	Road Name	Location	Direction	Count Site	Date	ADT
893100	Yates Well Road	Nipton	Two-way	E SH 15 Off-ramp	08/28/06	12
893100	Yates Well Road	Nipton	Two-way	W SH 15 On-ramp	08/28/06	249

Assumptions for the Existing AM conditions (see AFC Figure 5.12-3) were as set forth below. All movements were reversed for the Existing PM conditions (see AFC Figure 5.12-4).

- At southbound I-15 off-ramp: 249 vehicles in both directions were counted by the County in 2006 at the I-15 on-ramp, i.e. 125 vehicles per direction. It was assumed that 80 percent of traffic is inbound during the AM peak (100 vehicles), and 20 percent is outbound during the AM peak (25 vehicles). Applying the 75/25 percent directional split observed from Caltrans' data yields the number used.
- At northbound I-15 off-ramp: 12 vehicles in both directions were counted by the County in 2006. With assumption that traffic is spread throughout the day, 1 vehicle per hour comes in and out. All were assumed to come from California.

### 3. Traffic Flows [Appendix B(g)(5)(C)(v)]

*Estimated percentage of current traffic flows for passenger vehicles and trucks; and*

**Information required for the AFC to conform to the regulations:**

*Please provide estimated percentage of current traffic flows for passenger vehicles and trucks (I-15).*

**Response** – The latest information available was found on Caltrans' website:  
<http://traffic-counts.dot.ca.gov/>

In 2005, 17.96 percent of traffic was truck traffic. The detailed counts are available in the vicinity of the Nevada state line and Nipton Road.

# 5.13 Visual Resources

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## 1. Photos and Photo Simulations [Appendix B(g)(6)(F)]

Provide:

- i) full-page color photographic reproductions of the existing site, and
- ii) full-page color simulations of the proposed project at life-size scale when the picture is held 10 inches from the viewer's eyes, including any project-related electrical transmission lines, in the existing setting from each key observation point. If any landscaping is proposed to comply with zoning requirements or to mitigate visual impacts, include the landscaping in simulation(s) representing sensitive area views, depicting the landscaping five years after installation; and estimate the expected time until maturity is reached.

### **Information required for the AFC to conform to the regulations:**

Please provide individual life-size photos of Figure 5.13-9a, Figure 5.13-9b, Figure 5.13-10a and Figure 5.13-10b. The purpose behind the use of a life-size (approximately tabloid size) photo is that if an individual extended it to a normal reading range and lined it up with the horizon at the KOP location, the photo simulation, if accurate, will line up/match the actual physical setting providing a true-to-life view of the proposed power plant.

**Response** – The Applicant respectfully disagrees with Staff that an 11 x 17 is necessary to provide a “life-size” view of the KOP. We maintain that an 8 x 10 is appropriate. However, as requested, AFC Figures 5.13-9a, 5.13-9b, 5.13-10a, and 5.13-10b have been resized to 11 x 17 and are attached.

## 2. Landscaping Plan [Appendix B(g)(6)(H)]

If any landscaping is proposed to reduce the visual impacts of the project, provide a conceptual landscaping plan at a 1:40 scale (1"=40'). Include information on the type of plant species proposed, their size, quantity, and spacing at planting, expected heights at 5 years and maturity, and expected growth rates.

### **Information required for the AFC to conform to the regulations:**

It states in the AFC that landscaping is to be installed at the Primm Valley Golf Course as a mitigation measure. A conceptual landscaping plan(s) was not provided in the AFC. Please provide a conceptual landscaping plan at a 1:40 scale or other legible scale pre-approved by staff.

**Response** – The Applicant suggested a Conceptual Landscaping Plan in an attempt to be proactive in addressing any concerns that may arise related to visual resources. This proactive approach is not an admission of a potential for significant impacts; rather, it is an attempt to proactively resolve any issues so that the project may move forward expeditiously. With this understanding, a Conceptual Landscaping Plan was not included in the AFC because it is intended that the Applicant would meet with the Primm Valley Golf Club landscaping and management staff to discuss their visual

resource concerns and landscaping preference, type, and location of plantings prior to the development of the Conceptual Landscaping Plan.

Although we believe it may be premature to expend significant resources at this juncture, in compliance with this Data Adequacy request, a Conceptual Landscaping Plan is provided as Figure VR-2 at a scale of 1:150. Five sets of these drawings at a scale of 1:40 are being provided to the CEC.

In addition, the Applicant will continue to pursue consultation with the Primm Valley Golf Club regarding the development of the Conceptual Landscaping Plan to ensure that the Landscaping Plan that is prepared, and approved by the California Energy Commission, so that it would remove any potential visual resource impacts issues. For that reason we have identified only the area (shown in the figures) that is proposed for landscaping and will work on identifying specific plants as we move forward from Conceptual landscaping Plan toward a final plan developed as part of the siting process.



KOP 1: Existing view looking southwest toward the Ivanpah 1 project site from Primm Valley Golf Club, Desert Course Hole 1.

**FIGURE 5.13-9a**  
**EXISTING VIEW OF IVANPAH**  
**1 FROM KOP 1 (HOLE 1)**  
IVANPAH SOLAR ELECTRIC GENERATING SYSTEM



KOP 1: Simulated “with-project” view looking southwest toward the Ivanpah 1 project site from Primm Valley Golf Club, Desert Course Hole 1.

**FIGURE 5.13-9b**  
**SIMULATED VIEW OF IVANPAH**  
**1 FROM KOP 1 (HOLE 1)**  
IVANPAH SOLAR ELECTRIC GENERATING SYSTEM



KOP 2: Existing view looking west toward the Ivanpah 2 and 3 project sites from Primm Valley Golf Club, Desert Course Hole 8. This photo shows very faintly the H-frame transmission line alignment that is aligned east-west, and in the distance, the mountains are evident.

**FIGURE 5.13-10a**  
**EXISTING VIEW OF IVANPAH 2**  
**AND 3 FROM KOP 2 (HOLE 8)**  
IVANPAH SOLAR ELECTRIC GENERATING SYSTEM

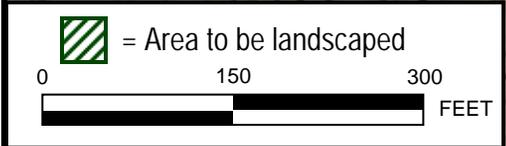


KOP 2: Simulated "with-project" view looking west toward the Ivanpah 2 and 3 project sites from Primm Valley Golf Club, Desert Course Hole 8. This photo shows four receiver towers for Ivanpah 2 (the left-most four) and three receiver towers for Ivanpah 3 (the three at the right side of the photo).

**FIGURE 5.13-10b**  
**SIMULATED VIEW OF IVANPAH 2**  
**AND 3 FROM KOP 2 (HOLE 8)**  
IVANPAH SOLAR ELECTRIC GENERATING SYSTEM







**FIGURE VR-2b**  
**CONCEPTUAL LANDSCAPE PLAN DETAIL B – MULTIPLE**  
**TEE BOXES FOR 7<sup>th</sup> HOLE; 6<sup>th</sup> AND 8<sup>th</sup> GREENS**  
 IVANPAH SOLAR ELECTRIC GENERATING SYSTEM



# 5.14 Waste Management

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## **1. Direct and Indirect Impacts [Appendix B(g)(1)]**

*...provide a discussion of the existing site conditions; the expected direct, indirect and cumulative impacts due to the construction, operation and maintenance of the project; the measures proposed to mitigate adverse environmental impacts of the project; the effectiveness of the proposed measures; and any monitoring plans proposed to verify the effectiveness of the mitigation.*

### **Information required for the AFC to conform to the regulations:**

*A discussion of the indirect impacts due to the project on facilities such as landfills etc. from construction, operation and maintenance of the project is required.*

**Response**— Impacts to landfills are discussed in Section 5.14.4 of the AFC as direct effects of the project’s construction, operation and maintenance. The Applicant does not anticipate any indirect effects to Waste Management due to construction, operation and maintenance as a result of this project.

# 5.14 Water Resources

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## 1. Water Characteristics [Appendix B(g)(14)(C)(ii)]

*The expected physical and chemical characteristics of the source and discharge water(s) including identification of both organic and inorganic constituents before and after any project-related treatment. For source waters with seasonal variation, provide seasonal ranges of the expected physical and chemical characteristics. Provide copies of background material used to create this description (e.g., laboratory analysis);*

**Information required for the AFC to conform to the regulations:**

*a. Please provide copies of the analytical data used to create the Tables for the Colosseum wells #1 and #2*

**Response** – The analytical data used to create the tables for the Colosseum wells #1 and #2 is provided in Attachment WR-1A. The data was compiled by GEOSCIENCE Support Services, Inc. based on publicly available data from the County of San Bernardino, Department of Public Health. As shown in Attachment WR-1A, the data spans several years as there was not a complete set of data for any one well for any one year.

*b. Discuss and provide data on the chemical and physical characteristics of the wastewater to be discharged to landscaping after treatment by the package sewage treatment system.*

**Response** – The chemical and physical characteristics of the wastewater to be discharged to landscaping after treatment by the package sewage treatment system cannot be determined at this time because a specific package treatment system has not been selected. However, in selecting a package treatment plant, it will be specified that the plant’s wastewater meet or exceed the U.S. Environmental Protection Agency’s recommended limits for constituents in reclaimed water for irrigation. These requirements are provided below.

TABLE WR-1b  
USEPA’s Recommended Limits for Constituents in Reclaimed Water for Irrigation

Constituent	Long-Term Discharge/Use (mg/L)
Aluminum	5.0
Arsenic	0.10
Beryllium	0.10
Boron	0.75
Cadmium	0.01
Chromium	0.1
Cobalt	0.05
Copper	0.2

TABLE WR-1b  
USEPA's Recommended Limits for Constituents in Reclaimed Water for Irrigation

Constituent	Long-Term Discharge/Use (mg/L)
Fluoride	1.0
Iron	5.0
Lead	5.0
Lithium	2.5
Manganese	0.2
Molybdenum	0.01
Nickel	0.2
Selenium	0.02
Vanadium	0.1
Zinc	2.0
Constituent	Recommended Limit
pH	6.0
TDS (total dissolved solids)	500 to 2,000 mg/L
Free Chlorine Residual	< 1 mg/L

Source: U.S. Environmental Protection Agency. Guidelines for Water Reuse. September 2004. Available at: <http://www.epa.gov/ord/NRMRL/pubs/625r04108/625r04108.pdf>

## 2. Engineer Qualifications [Appendix B(g)(14)(E)(ii)]

*If the project will pump groundwater, an estimation of aquifer drawdown based on a computer modeling study shall be conducted by a professional geologist and include the estimated drawdown on neighboring wells within 0.5 mile of the proposed well(s), any effects on the migration of groundwater contaminants, and the likelihood of any changes in existing physical or chemical conditions of groundwater resources shall be provided;*

### **Information required for the AFC to conform to the regulations:**

*Please provide the name and California license number of the Professional Geologist who wrote the Groundwater Availability report.*

**Response** – The Groundwater Availability report was prepared by Timothy J. Durbin, P.E., civil engineer license number c 20651, expiration date 9/30/2009. As you are aware, Groundwater hydrology is a discipline that is included under both the geologist and engineering licenses.

# ATTACHMENT WR-1A

Luz II

## Summary of Recent Water Quality Results Primm Valley Golf Club Wells

Chemical Constituent or Physical Property		Well Owner and Designation				
		PVGC Colosseum Well No. 1	PVGC Colosseum Well No. 2	PVGC Well No. 7	PVGC Well No. 8	PVGC Well No. 9
Aggressiveness Index (Calc)	-	-	12.52	12.70	-	12.71
Alkalinity (CaCO <sub>3</sub> )	[mg/L]	160	161	126	150	174
Aluminum (Total)	[µg/L]	-	< 25	< 25	-	< 25
Arsenic (Total)	[µg/L]	1.4	3.7	1.4	1.2	1.9
Barium (Total)	[µg/L]	150	120	270	-	180
Beryllium (Total)	[µg/L]	< 2.5	< 1	< 1	-	< 1
Bicarbonate Alkalinity (HCO <sub>3</sub> )	[mg/L]	200	195	153	180	211
Cadmium (Total)	[µg/L]	< 2	< 0.5	< 0.5	-	< 0.5
Calcium (Total)	[mg/L]	36	30	73	31	43
Carbonate	[mg/L]	< 3	< 3	< 3	< 3	< 3
Chloride	[mg/L]	69	41	640	350	110
Chromium (Total)	[µg/L]	< 5	3.7	6	-	8.7
Color (A.P.H.A.)	[color unit]	-	< 3	< 3	-	< 3
Copper	[mg/L]	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Cyanide	[mg/L]	-	< 0.025	< 0.025	-	< 0.025
Fluoride (Total)	[mg/L]	0.60	0.58	0.24	-	0.66
Iron (Total)	[µg/L]	< 20	< 20	< 20	30	< 20
Langelier Index (25 deg. C)	-	-	0.62	0.80	-	0.81
Magnesium	[mg/L]	22	20	17	13	9
Manganese (Total)	[µg/L]	< 10	< 2	< 2	< 10	< 2
Mercury	[µg/L]	< 0.2	< 0.2	< 0.2	-	< 0.2
Nitrate (as N)	[mg/L]	2.3	1.9	2.3	2.7	4.2
Nitrite (as N)	[mg/L]	-	< 0.2	< 0.5	-	< 0.5
Odor	[TON]	-	1	1	-	1
Potassium	[mg/L]	3	3	6	5	4
pH	[std. units]	7.6	8.3	8.2	7.7	8.3
Radium 228	[pCi/L]	< 1 +/- 0.74	< 1 +/- 0.59	< 1 +/- 0.79	< 1 +/- 1.0	< 1 +/- 0.80
Radon	[pCi/L]	-	-	-	-	-
Selenium (Total)	[µg/L]	2.3	< 5	< 5	-	< 5
Silver (Total)	[µg/L]	< 5	< 0.5	< 0.5	-	< 0.5
Sodium	[mg/L]	59	57	400	260	140
Strontium	[mg/L]	0.57	0.48	-	-	-
Sulfate	[mg/L]	36	43	42	45	51
Surfactants (MBAS)	[mg/L]	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Thallium (Total)	[µg/L]	< 0.5	< 1	< 1	-	< 1
Total Alpha Particle	[pCi/L]	3.6 +/- 2.1	3.1 +/- 2.0	< 3.00 +/- 2.7	< 2	3.5 +/- 2.00
Total Beta Particle	[pCi/L]	3.1 +/- 1.5	3.0 +/- 1.5	< 3.00 +/- 2.2	< 2.1	< 3.00 +/- 1.3
Total Dissolved Solids (TDS)	[mg/L]	380	350	1,380	870	572
Uranium	[µg/L]	5	4.1	5.6	-	6.5
Vanadium	[µg/L]	10	10	-	-	-
Zinc (Total)	[µg/L]	< 10	6	< 5	< 10	< 5
Volatile Organic Chemicals	[µg/L]	ND	ND	ND	-	ND

Shaded cells (see below) represent the year from which water quality results were collected, analyzed, and reported.

2005
2003
2001
1998

Source: County of San Bernardino Department of Public Health